Essays on Corruption, Inequality, and Economic Growth

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April 2012

Abstract

This thesis investigates novel and unique avenues of corruption in an attempt to reach a better understanding of the causes of corruption. In particular, the thesis theoretically and empirically examines the implication of the military in politics in breeding corruption and the importance of financial development in reducing corruption. The thesis also improves our understanding of cross-country variations in inequality and economic growth by providing a deeper analysis of growth-inequality relationship with a particular focus on the role of globalisation and domestic policy reforms.

To achieve this aim, the thesis contains four core chapters (essays) in addition to an introductory chapter, literature review chapter and a concluding chapter. The four core chapters can be viewed different from one another. The first two core chapters address the causes of corruption. In particular, the first of these two chapters assess the role of military in politics in determining corruption levels, and investigate how important financial development is for corruption. The other two core chapters provide deeper understanding of cross-country variations in inequality, poverty and economic growth.

Recent theoretical developments and case study evidence suggests a relationship between the military in politics and corruption. In the third chapter, this study contributes to this literature by analyzing theoretically and empirically the role of the military in politics and corruption for the first time. By drawing on a cross sectional and panel data set covering a large number of countries, over the period 1984-2007, and using a variety of econometric methods substantial empirical support is found for a positive relationship between the military in politics and corruption. In sum, our results reveal that a one standard deviation increase in the military in politics leads to a 0.22 unit increase in corruption index. This relationship is shown to be robust to a variety of specification changes, different econometric techniques, different sample sizes, alternative corruption indices and the exclusion of outliers. This study suggests that the explanatory power of the military in politics is at least as important as the conventionally accepted causes of corruption, such as economic development.

The importance of financial market reforms in combating corruption has been highlighted in the theoretical literature but has not been systemically tested empirically. In the fourth chapter,

we provide a first pass at testing this relationship using both linear and non-monotonic forms of the relationship between corruption and financial intermediation. Our study finds a negative and statistically significant impact of financial intermediation on corruption. Specifically, the results imply that a one standard deviation increase in financial intermediation is associated with a decrease in corruption of 0.20 points, or 16 percent of the standard deviation in the corruption index and this relationship is shown to be robust to a variety of specification changes, including: (i) different sets of control variables; (ii) different econometrics techniques; (iii) different sample sizes; (iv) alternative corruption indices; (v) removal of outliers; (vi) different sets of panels; and (vii) allowing for cross country interdependence, contagion effects, of corruption.

In the fifth chapter, we examine the impact of globalisation on cross-country inequality and poverty using a panel data set for 65 developing counties, over the period 1970-2008. The role of globalisation in increasing inequality in economies with financial markets imperfections has been highlighted in the theoretical literature but has not been systemically tested empirically. We provide a first pass at testing this relationship between globalisation and inequality in the presence of underdeveloped financial markets. Our study finds a negative and statistically significant impact of globalisation on poverty in economies where financial systems are relatively developed, however, inequality-reducing effect of globalisation in these economies is limited. The other major findings of the study are five fold. First, a non-monotonic relationship between income distribution and the level of economic development holds in all samples of countries. Second, both openness to trade and FDI do not have a favourable effect on income distribution in all selected developing countries. Third, high financial liberalization exerts a negative and significant influence on income distribution in developing countries. Fourth, inflation seems to distort income distribution in all sets of countries. Finally, the government emerges as a major player in impacting income distribution in developing countries.

In the last core chapter, we analytically explore and empirically test the relationships between economic growth, inequality and trade. This study contributes in the existing literature by answering the question why growth effects of income inequality and trade are not definitely positive or negative. This study determines the positive effects of inequality and trade on growth both in the short run and long run. However, the growth effect of inequality is

substantially influenced by the domestic context in terms of the prevalence of credit market imperfections. The study identifies credit market imperfections in low-income developing countries as the likely reason for a positive relationship between inequality and economic growth. Similarly, growth effect of trade is found to be negative in economies where inequalities are comparatively high. The results show that inequality does matter for economic growth, but in different ways for different regions at different levels of economic development. The inequality-growth nexus is significantly negative for the low-income group but strongly significantly positive for the high-income one. The findings of the study are robust to alternative econometric techniques, specifications, control of nonlinearity, inclusion of additional control variables, exclusion of outliers and sub-samples.

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Acknowledgment

I would like first to express my sincere thanks and deep gratitude to Almighty Allah for his support, guidance, and blessing during the entire period of my study.

Further, I would like to record that I am highly indebted to Professor Ronald MacDonald, my first supervisor, for his guidance, constructive and incisive comments, and dedication during the course of my research over the past three years. He is a complete institution in himself; I not only learned how to conduct high quality research on economics from him but also learned many non-academic things, particularly how to behave in the best way as a human being and how to organise a good quality of life. I am also grateful to Dr. Luis Anglees, my second supervisor, for his comments. I also thank my external examiner Professor John Weiss and internal examiner Dr Joe Byrne.

This thesis has entered the public domain in the form of joint working papers between student and supervisor. Nevertheless, I developed my own ideas and all estimates and calculations were performed by me in the thesis. My supervisor only made recommendations on how these could be turned into working papers. He had no role whatsoever in the underlying ideas or the theoretical and empirical contribution.

My gratitude is also extended to the academic staff at the Department of Economics and my PhD colleagues, for their helpful comments on my work during the PhD workshops sessions. In particular, Professor Jim Malley, Dr. Alberto Paloni, Dr Marina Eliza Spaliara, Dr. Alexandros Kontonikas, Mr Anthony Gloyne and Dr. Joseph Byrne. My appreciation is also extended to the administrative staff at the department, particularly to Ms Jane Brittin for her great cooperation and assistance during the past three years. My appreciation is also extended to the International Family Network in Glasgow University for arranging a number of family events.

This thesis has benefited from comments received from participants at the Royal Economic Society Annual Conference, 17-19 April 2011 London UK; Easter School, 17-31 March 2011, University of Birmingham; the Warsaw International Economic Meeting, 2-4 July 2010, Warsaw, Poland; the DSA Scotland Mini Conference, 14 October 2011, the University of

Aberdeen; Conference: Monetary policy before, during and after the crisis, 29-30 September, Heriot-Watt University, Edinburgh; Workshop: International Political Economy and Cross-Border Effects, 28 April 2011, Queen Mary University of London, the Applied Quantitative Methods Network (AQMeN) 2011 PhD Conference, 16 May 2011, the University of Edinburgh; the Scottish Economic Society Annual Conference 2011, 4-6 April 2011, Ramada Jarvis Hotel, Perth, Scotland, UK; the First German ECSA Young Researcher Conference, 21-23 February 2011, the European Academy Berlin, Germany; Second Joint Osteuropa-Institut Regensburg (OEI)/ Akademie für Politische Bildung (APB) Summer Academy, 14-16 July 2010, Tutzing on Lake Starnberg near Munich, Germany; the Economic and Social Data Service (ESDS) 6th Annual Conference, 29 November 2010, and the 7th ESDS International Annual Conference 2011, 28 November 2011, Institute of Materials in London.

In addition, this thesis has benefited from comments received from participants at the PhD workshop series at University of Glasgow UK; the Young Researchers' X-change, PhD Workshop Series, 4-5 November 2010 and 11 February 2011, University of St Andrews and; the AQMeN PhD Event 19 May 2011 and 17 August 2011, University of Edinburgh. UK. I am obliged to all of my teachers and friends in Pakistan. I am thankful for the personal insights offered by Professor Bill Greene on various econometric methods for the empirical data analysis.

I am thankful to my sponsor, the Quaid-i-Azam University in Pakistan, for financing my PhD costs. I have received financial assistance to present my research papers and to attend different training courses, for that, I am thankful to SIRE, AQMeN, the Business School of Glasgow University, the Royal Economic Society, the DSA Scotland, the Economic and Social Data Service (ESDS), the OEI/APB Summer Academy, the Arbeitskreis Europäische Integration (AEI) and ZEW Mannheim European Academy Berlin Bismarckallee.

Finally, I cannot find words to express my appreciations for my parents, my brothers, and sisters who helped me in many ways to write this thesis. I am deeply grateful to my wife for her continuous patience, encouragement, supports, and fruitful advises. Last but not least, warm thanks are extended to my two lovely sons for their tolerance to any negligence from my end during the course of my study.

Declaration

I declare that, except where explicit reference is made to the contribution of others, that this thesis is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Signature
Muhammad Tariq Majeed

Abbreviations

CC	Control of Corruption
2SLS	Two-Stage Least Square
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GMM	Generalised Method of Moment
HFI	High Financial Intermediation
ICRG	International Country Risk Guide
IFS	International Financial Statistics
IMF	International Monetary Fund
IV	Instrumental Variable
LFI	Low Financial Intermediation
LIML	Information Maximum Likelihood
MNCs	Multinational Corporations
MOOTW	Military Operations Other Than War
OECD	Organisation of Economic Co-operation and Development
OLS	Ordinary Least Square
PCY	Per Capita Income
PPP	Purchasing Power Parity
PRS	Political Risk Services Group
R & D	Research and Development
SWC	Spatially Weighted Corruption
TI	Transparency International
UNO	United Nations Organization
WB	World Bank
WGI	Worldwide Governance Indicators
WTO	World Trade Organization

1. Introduction

1.1. Motivation

1.1.1 Corruption

"A rotten apple spoils the barrel." (English proverb);
"Corruption of the best becomes the worst." (Latin proverb);
"Power tends to corrupt, and absolute power corrupts absolutely." (Lord Acton);
"Corruption is nature's way of restoring our faith in democracy." (Ashleigh Brilliant).

Corruption, i.e., 'the misuse of public power for private gain' is believed to be widespread and persistent, in varying degrees, in every country in the world. It contributes to low economic growth, stifles investment, inhibits the delivery of public services and increases inequality to such an extent that the World Bank has identified corruption as 'the single greatest obstacle to economic and social development' (World Bank, 2001a).

Corruption is an ancient problem which has existed for many centuries. It was pervasive in the times of the Roman and Greek empires (MacMullen, 1988). It is widely accepted among scholars and policy makers that widespread economic and political corruption triggered the demise of great empires of the past. Current governments have their genesis in earlier structures which were 'rotten to the core'. Now, corruption scandals emerge from in walks of life, including business, politics and government. Philosophers, scholars and policy makers have grappled with corruption over many centuries. Despite anti-corruption solutions, it could not be eliminated completely and in fact it has managed to survive and perpetuates itself, and therefore still exists. Although its appearance, degree and manifestations have altered through the centuries, worldwide existence and perseverance are its defining characteristics.

Although corruption is an old issue, the explosion in the volume of studies investigating the causes and consequences of corruption is fairly recent. Studies on corruption begin to proliferate in the 1990s and reached a peak in the same period, with a continuing momentum throughout the 2000s. The increasing volume of studies on the causes and consequences of corruption awakened policy makers in the early 1990s and there is now an overwhelming

consensus that corruption is a significant obstacle to social and economic development. In 1996, World Bank President James Wolfenson declared war on the “cancer of corruption” and since then the Bank has been engaged in a comprehensive war against corruption.

The World Bank actively supports governments in improving transparency, accountability to citizens and improvement in delivering services. In this respect, in the fiscal year 2011, the Bank provided 11 percent of its lending (US$4.7 billion) to help countries improve the quality and accountability of core public sector institutes[1]. In recent years, other international organisations such as the United Nations, the IMF, and the OECD have made corruption a significant focus of their agendas and have made important attempts to curb corruption in the world, particularly in developing countries that are more prone to corrupt activities because of their weak democracies and institutes.

It is widely accepted by economists, development practitioners and policy makers that corruption is a problem of developing countries. However, the World Bank’s director for Governance, Daniel Kaufmann states that: "It is important to emphasize that this is not simply a developing country problem, fighting corruption is a global challenge." Recently, Kaufmann notes that: “some of my research tends to challenge orthodoxy, such as taking issue with the claim that the developing ‘world’ is corrupt (contrasting wealthy nations); that corruption is largely about blatant bribery, and that corruption and macro-economic stability should be viewed separately from each other by different types of ‘experts’. I am committing the heresy of focusing on the link between corruption and budget deficits in industrialized countries. After all, even if politically incorrect to admit it, there are a number of rich countries where corruption is widespread, in a variety of forms, illegal and ‘legal’, political and financial”[2].

In addition, recently, a number of scandals over corruption have shown that rich nations, supposedly free from corruption, are also suffering from its effects. In Norway and Sweden (regarded as the cleanest nations), for example, state owned companies have been shown to be involved in bribe taking. In Germany, former Chancellor Helmut Kohl and his Christian Democratic party, the CDU, were found to be involved in malpractices and they were penalized for receiving illegal campaign funding. A number of corruption scandals have being

[1] http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,print:Y~isCURL:Y~contentMDK:20040922~menuPK:34480~pagePK:34370~theSitePK:4607,00.html
[2] http://thekaufmannpost.net/corruption-and-fiscal-deficits-in-rich-countries/

reported in Italy: for example, “A report from the state auditor shows that cases of corruption in Italy have increased by more than 200% since 2008[3].” Similarly, in France “Forty-nine businessmen and public housing officials have gone on trial, accused of taking bribes when President Jacques Chirac was mayor of Paris”[4]. Recently, Austria's former chancellor, Wolfgang Schüssel, has ended his political career as a corruption scandal continues to unfold around him[5]. In fact, recent emerging major corruption scandals have shaken a striking and variety of countries all over the world: the United States, Japan, Italy, France, Germany, South Korea, Mexico and the Kenya.

The average level of corruption in European countries during 1984 was a 0.78 unit of the corruption index. Given that the corruption index ranges from 0 to 6, where 0 indicates an absence of corruption and 6 indicates the highest corruption, such a low value of a corruption index implies that European countries were initially close to zero level of corruption. However, the average level of corruption in European countries has increased, up to 2.12 in 2007. Although corruption levels in Europe are still comparatively low, in fact the cleanest countries in the world, such as Sweden, Finland and Denmark, are located in Europe, but nonetheless the corruption levels have increased by 1.34 unit of the corruption index over the period 1984-2007. Such an increase of 1.34 units implies that corruption in European countries, on average, has increased by 22% of the corruption index. This is an alarming figure for European countries and surely needs to be rapidly addressed in order to avoid the adverse socio-economic and political consequences of an increasing rate of corruption (MacDonald and Majeed, 2011).

Figure 1-1 shows the results from regressing the corruption index onto a constant and a time trend. It is evident from the figure that the relationship between corruption and time is akin to an inverted U-shape over the period 1984-92. However, from 1992 to onwards corruption is increasing. In fact, the figure clearly shows a rising trend in corruption over the period.

[3] http://news.bbc.co.uk/1/hi/world/europe/8527593.stm
[4] http://news.bbc.co.uk/1/hi/world/europe/4641372.stm
[5] http://www.dw-world.de/dw/article/0,,15365554,00.html

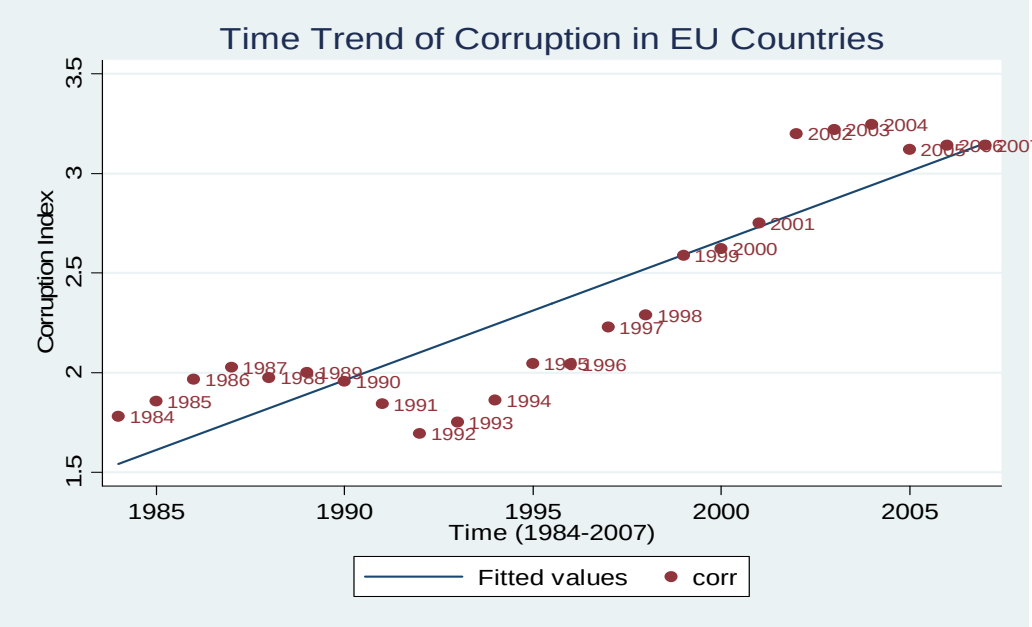


Figure 1-1: Corruption in European Countries

In order to control corruption, conventions have been signed by international organisations in the international arena. Two important conventions are the Anti-Bribery Convention and the Convention against Corruption, of the Organisation for Economic Cooperation and Development (OECD) and the United Nations (UN), respectively. The Anti-Bribery Convention was signed in 1997 and came into force in 1999 while the UN convention was signed in 2003 and came into force in 2005. The former declared it a crime to offer, give or promise a bribe to public officials in exchange for international business deals. The latter facilitates powerful new capacities for mutual legal assistance among countries to control corruption, such as making it easier to return assets stolen by corrupt leaders.

Since corruption by its nature has adverse economic, social and political effects, the importance of anti-corruption policies, in recent years, has significantly increased. The effectiveness of these policies depends on a thorough understanding of the roots of corruption. However, available evidence on causes of corruption has not been fully explored and much of it is disputed. Consequently, it is not easy for governments to formulate coherent, comprehensive and effective polices to fight against corruption.

If the experience of the anti-corruption community over the last two decades has taught us anything, it is that corruption is an almost omnipresent, multi-faceted problem and that

controlling corruption is a complex endeavour. Over the years, a considerable advance has been made in developing empirical tools and analytical approaches to improve our understanding of why corruption exists to varying degrees across the world and what tools are effective to eradicate it. Although now we have a better understanding about corruption than we have ever had in the past, it is a fact that a great deal of progress still needs to be made in understanding the causes of corruption and in devising effective anti-corruption policies. Considering the importance of a thorough understanding of the causes of corruption, this thesis provides novel and unique insights into the causes of corruption. In addition, we attempt to provide a better understating of the causes of corruption, which are inconclusive in the literature.

Cross-country empirical studies of the causes of corruption have investigated a wide range of factors such as economic, cultural, political and institutional aspects (see for example Treisman, 2000; Serra, 2006; Majeed and MacDonald, 2010). In addition, Ades and Di Tella (1997), Bardhan (1997), Jain (2001), Lambsdorff (2006) and Seldadyo and Haan (2006) provide extensive literature reviews. In the wake of the proliferation of a large number of studies on corruption, a consensus among academicians and policy makers on some of causes of corruption is slowly emerging. However, some causes of corruption are still inconclusive such as the role of government spending and trade in determining corruption.

Many studies have considered ‘political variables’ (see, for example, Treisman, 2000; Serra, 2006) and a country’s institutional structure (see, for example, Herzfeld and Weiss, 2003; Damania et al., 2004) as important determinants of corruption: specifically, economies with political stability and strong institutions are less prone to corruption. In this study we explore other avenues that might explain corruption in order to provide a deeper understanding of corruption’ incidence and its variation across nations. The motivation behind our search is to provide national governments and international bodies with more scientific and factual information on causes of corruption so that curse of global corruption can be curbed more effectively. This study indentifies the role of military elites in politics as a major factor that fosters corruption. To the best of our knowledge, this is the first study to highlight this important determinant of corruption.

Figure 2 demonstrates the relationship between the military in politics and corruption over the period 1996-2007 for a large cross section of countries. This figure has been constructed to view the relationship between the military in politics and corruption using three alternative corruption indices that are extracted from the International Country Risk Guide, Transparency International and World Bank, respectively. It is evident from all sub parts of the figure that the relationship between the military in politics and corruption is positive irrespective of which corruption index is being used.

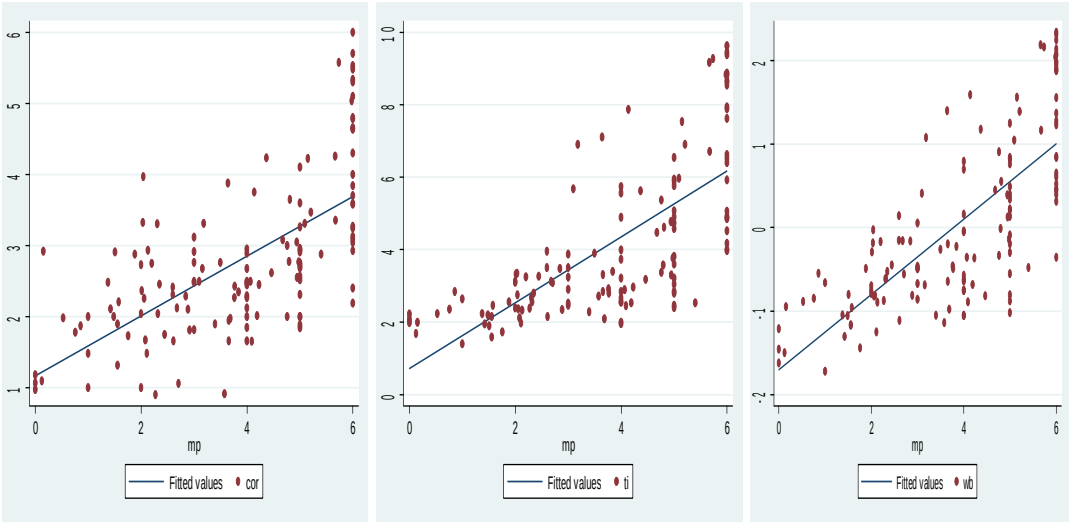


Figure 1-2: Corruption and Military in Politics

Figure 1-2a **Figure 1-2b** **Figure 1-3c**

Although studies of the causes of corruption have proliferated in recent years, some of the avenues of corruption, other than political factors, such as the role of market imperfections for rent seeking and corrupt activities, still remain to be fully explored. Lack of competition in product or/and financial markets increases rent seeking activities which are closely associated with corruption levels. Theoretical studies predict conflicting effects of competition on corruption. On the one hand, lack of competition generates rents (supra normal profits) for entrepreneurs, thereby motivating bureaucrats to ask for bribery (Foellmi and Oechslin (2007). On the other hand, the presence of these rents increases the values of monitoring the bureaucracy in a society (Ades and Di Tella (1999).

This study focuses on the lack of competition in financial markets where lower levels of financial intermediation are taken to indicate underdeveloped financial systems. The motivation for testing the impact of financial intermediation on corruption is three fold. First, theoretical studies predict a relationship between financial reforms and corruption but to the

best of our knowledge this relationship has not been tested. Second, theoretical studies predict ambiguous effects of financial reforms on corruption and this can only be clarified in an empirical setting. Third, theoretical studies indicate the importance of a threshold in shaping the link between corruption and financial reforms and again this can only be clarified in an empirical context.

The existing literature on the causes of corruption assumes that corruption is explained by country-specific factors, meaning that it is independent of corruption in neighbouring countries. Nevertheless, unfortunately, corruption is not just a country-specific issue and corruption by its nature is not bound to stay within the boundaries of a country. Particularly, due to its boundary-free nature, corruption is likely to flourish in EU states, as these countries provide a border-free environment for their citizens.

In this study we also take account of contagion nature of corruption. The motivation for spatial analysis of corruption is two fold. First, cultural reasons of corruption are closely related to cross country interdependence of corruption, as norms about corruption tolerance are more likely to spread to neighbouring countries as compared to distant countries. Such interdependence of corruption implies that corruption levels may vary less within a region because of similar cultural reasons (for example, Paldam (2002) points out that corruption is mainly supported by cultural factors). Second, Becker et al. (2009) provide empirical evidence of cross country interdependence of corruption.

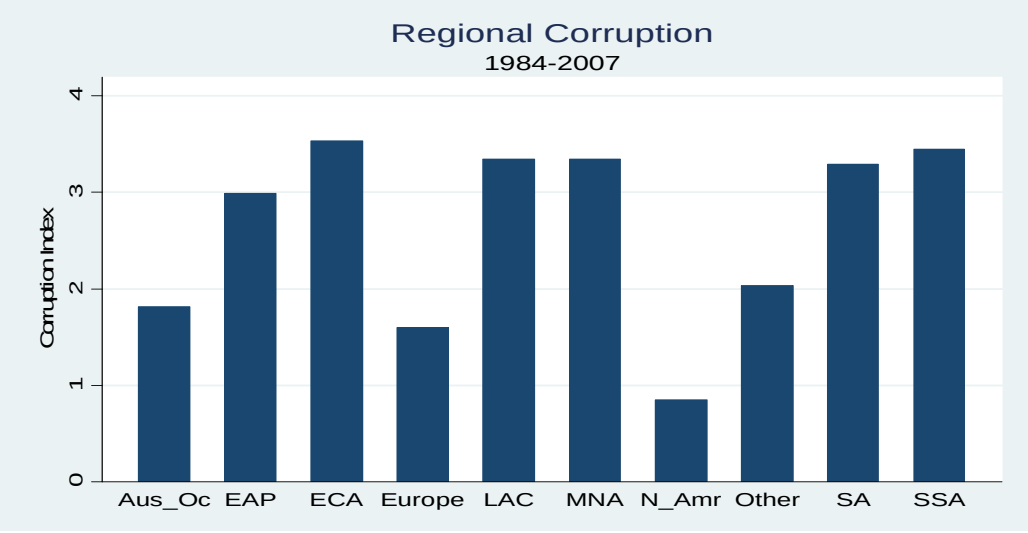


Figure 1-3: Corruption trends in different regions of the world.

Figure 1-3 shows that corruption exists in all regions of the world with a varying degree. Although corruption is more pervasive in the developing regions such as Sub-Saharan Africa but it is likely to increase in developed regions as well because of its border free nature. Recently MacDonald and Majeed (2011) provide compelling evidence that corruption in rich countries has substantially increased over the period 1984-2007. In addition, according to a recent report by Transparency International, "the 2011 Corruption Perceptions Index shows that public frustration is well founded. No region or country in the world is immune to the damages of public-sector corruption, the vast majority of the 183 countries and territories assessed score below five on a scale of 0 (highly corrupt) to 10 (very clean)"[6].

Our starting point is that corruption is currently a global concern and poses one of the biggest challenges across countries throughout the world. In this respect, this thesis will analyse, discuss and contribute to the corruption literature on the two most recent issues significant for the reduction of corruption: the military in politics, and financial sector reforms. These two issues are examined in the context of developing and developed countries. These two issues can be viewed independent of one another. In addition, this study provides a better understanding of those causes of corruption which are not conclusive in the current literature. Important innovations include considering a wide set of historical, economic, cultural and political determinants of corruption and examining some of the previously considered determinants at a finer level of detail. Hence, this study not only improves our understanding about the existing causes of corruption but also provides new insights into these causes.

1.1.2 Inequality and poverty

The 20th century saw uneven improvement in living standards of people in different parts of the world. According to the World Bank (2001b), poverty has declined over the past twenty years but the progress has been unequal. The number of people living below poverty line fell from 1.5 billion in 1981 to 1.1 billion in 2001. Despite this development, many countries are still facing the problem of poverty and suffering from the vicious circle of the poverty trap. Poverty in Sub-Saharan Africa rose from 41 % to 46% over the period 1981-2001, while in Eastern Europe and Central Asia poverty increased to 20% in 2001. Hence, reducing poverty has become an important challenge for developing countries.

[6] http://cpi.transparency.org/cpi2011/results/

Economic growth is considered to be a powerful, key force which can significantly reduce poverty incidence as rapid and sustained growth creates employment opportunities and high wage rates. Nevertheless, the extent of poverty reduction in response to growth primarily depends on two factors: initial level of income inequality, and response of inequality to growth. According to the well-known Kuznets (1955) inverted-U hypothesis economic growth can affect inequality in either direction depending upon the levels of economic development. If income inequality increases in response to high economic growth then poverty may not fall to a significant level.

According to the Kuznets (1955) inverted-U hypothesis, income inequality increases during the early stages of economic development and, after reaching a turning point, declines. Although, the Kuznets curve predicts a negative effect of economic growth on inequality at higher levels of economic development, surprisingly, poverty is still a long standing problem in the world, despite many growth episodes. However, the literature does not predict a definite relationship between economic growth and income inequality and so it is difficult to say whether growth is good or bad for the poor and whether, in fact, the Kuznets curve holds. For this reason, understanding the relationship between economic growth and inequality is a key concern for development practitioners and policy makers.

A number of developing countries witnessed high growth levels in different periods but poverty still exists since inequalities have increased. For instance, most South and East Asian economies grew at a higher rate since 1970s together with increasing inequalities over time. On the other hand, Latin American countries growth rates are less than half of the average growth rates of South and East Asian economies while maintaining high inequalities. The differences in inequalities at a given rate of growth show that different combinations of polices and institutions across countries matter for inequalities. It can be argued that leaving poverty on economic growth will not serve the purpose but poverty reduction requires high growth rates and combination of policies which ensure lower inequalities. Whether globalisation can be helpful in reducing inequality and poverty in developing counties is not yet conclusive in the both theoretical and empirical literature.

It is widely accepted by economists, development practitioners, and policy makers that relatively more open economies generate more gains over a long period of time, and policies which support openness contribute significantly to economic prosperity, employment enhancement and poverty eradication. However, it is also possible that successful open regimes, even in the long run, may leave a number of people behind in poverty. Since trade liberalization by its nature implies adjustment, it is likely to have distributional impacts that normally harm poorer individuals in an economy. The core of this argument is that free trade accentuates, rather than ameliorates, poverty and income inequality in poor countries.

Theoretically speaking, the impact of globalisation on inequality is unclear and depends on the circumstances of individual countries as well as on the aspect of globalisation involved (O'Rourke, 2001). Different theories have been put forward to analyse the effect of globalisation on inequality, which can be grouped into three categories (Wade, 2001): neoclassical growth theory, endogenous growth theory, and the dependency theory of sociologists. Neo-classical growth theory expects income convergence across countries in the long run due to increased international mobility of capital. In contrast, endogenous growth theory predicts less convergence and, more likely, divergence, as increasing returns to technological innovation offset the diminishing returns to capital. Finally, the dependency theory suggests that developing countries reap lesser rewards from economic integration as they have relatively limited access to international markets and a narrow export base; hence, globalisation does not lead to absolute convergence.

In the presence of such diversified theoretical predictions, estimating the actual impact of globalisation on inequality and poverty remains largely an empirical issue. The available evidence, however, does not produce a consensus and the effect of globalisation on inequality and poverty remains ambiguous. Also, no previous study has tried to quantify the relative contributions of globalisation and other fundamental variables on inequality and poverty in developing countries. Clearly, from the national and international policy perspectives, it is imperative to explore both the nature and the importance of various factors in generating inequality and poverty. In this study we attempt to fill the gaps in the existing literature and lend a fresh perspective to the globalisation, inequality and poverty debate.

1.1.3 Inequality and poverty trends in selected regions

Figure 1-4 to Figure 1-8 illustrate poverty and inequality trends in the selected regions. The overall message of this simple descriptive explanation is that the poverty is a long-standing issue. High inequalities in combination with high poverty rates are major obstacles to social and economic development in many countries of the world. Although some countries have managed to control increasing trends of poverty, many countries are still trapped in a vicious circle of poverty. A deeper understanding of poverty and inequality predictors is important to develop pro-poor policy actions. In this respect, this thesis focuses on the role and importance of government and globalisation in explaining the cross-country variations in inequality and poverty.

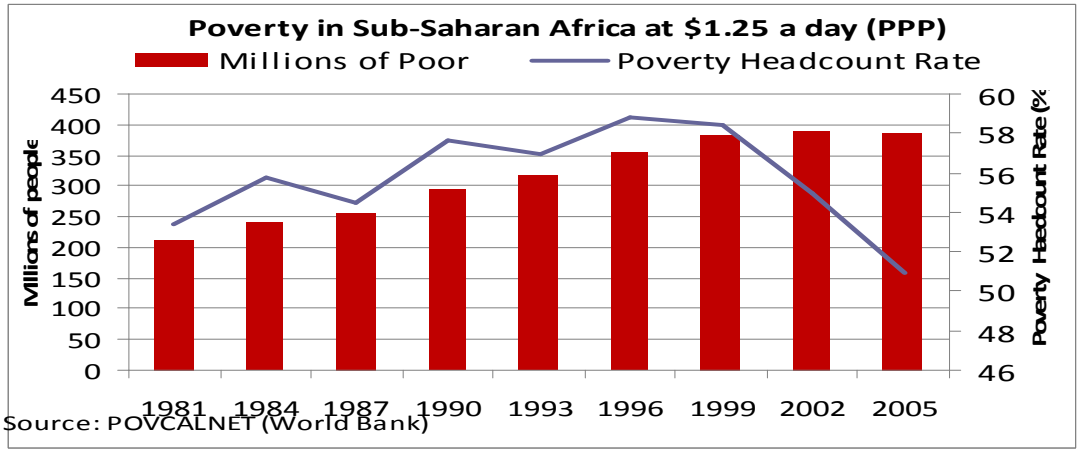


Figure 1-4: Poverty in Sub-Saharan Africa at $1.25 a day (PPP)

Figure 1-4 and Figure 1-5 demonstrate poverty and inequality trends over the period 1981-2005. The Figure 1-4 shows that the poverty rate in sub-Saharan Africa was 53.4% in 1981 and, on average, it increased up to 1999 then fell sharply in 2002 and 2005. Although the poverty rate in 2005 was 50.9%, this is still a high figure. Figure 1-5 shows inequality statistics in Sub-Saharan African countries. The Gini coefficient for individual countries is high. In many countries, the Gini values are greater than 40, which are remarkably high.

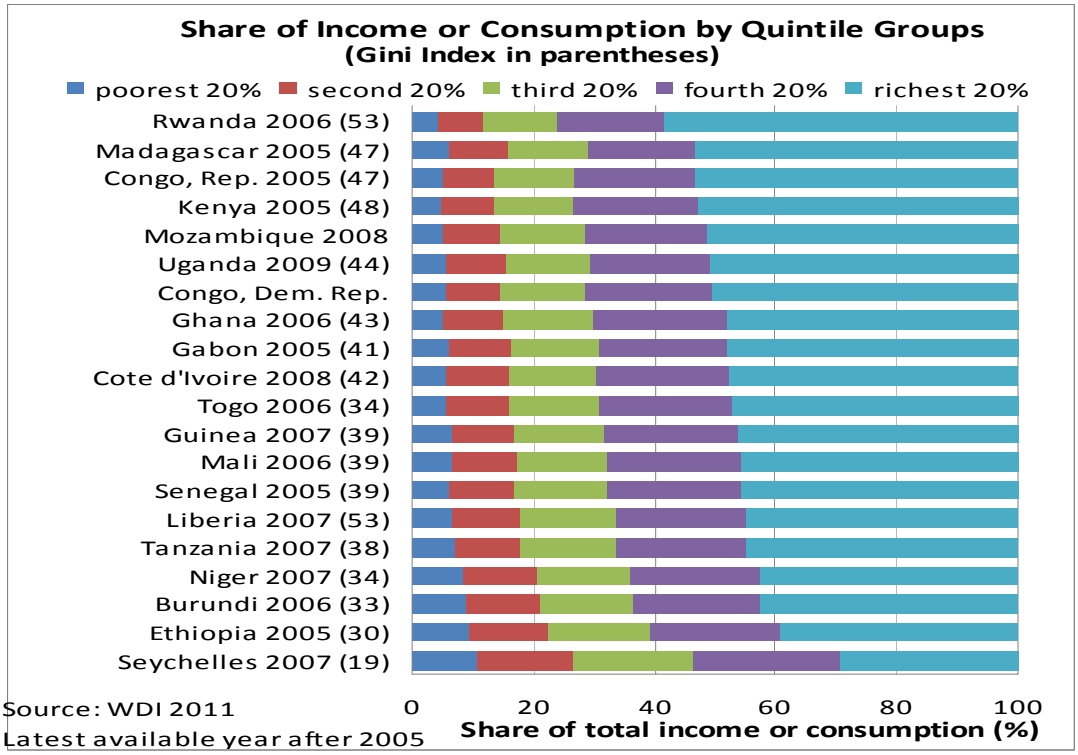


Figure 1-5: Inequality in Sub-Saharan Africa

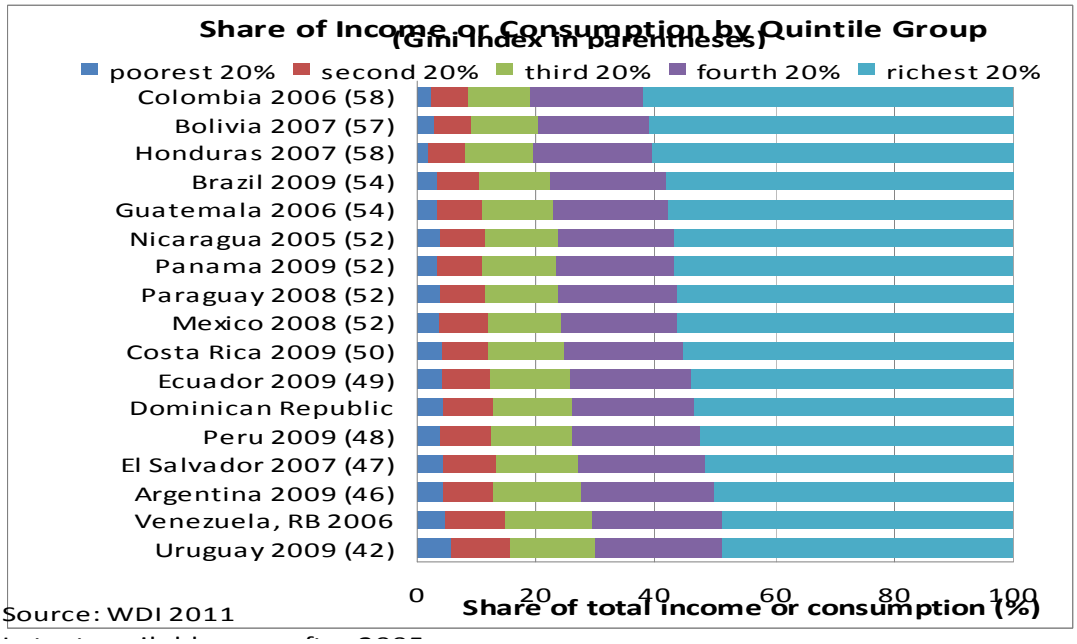


Figure 1-6: Inequality in Latin America and the Caribbean Countries

Figure 1-6 represents income inequality statistics for Latin America and the Caribbean countries. It is clear from the figure that income distribution in this region is highly unequal. There is only one country (Uruguay) which has the lowest value of the Gini coefficient (42),

which, in effect, is also a high value. On the other hand, two countries (Colombia and Honduras) have the highest value of the Gini coefficient, that is, 58.

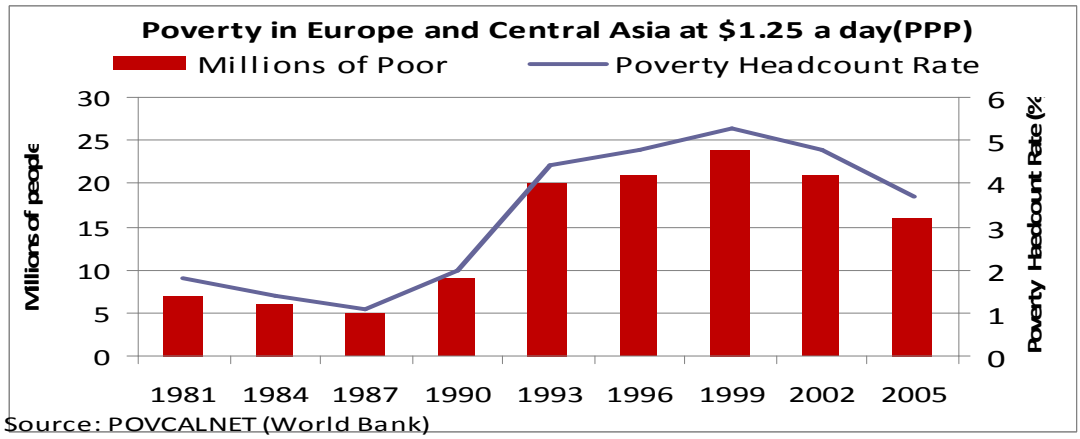


Figure 1-7: Poverty in Europe and Central Asia at $1.25 a day (PPP)

Figure 1-7 shows that poverty in Europe and Central Asia has increased from 1.8% to 3.7% over the period 1981-2005. Although poverty incidences in this region are comparatively low, the increasing trend of poverty is noteworthy and calls for policy attention. Finally, Figure 1-8 shows that poverty in South Asia was 59.4 in 1981 and it fell to 40.3 over the period 1981-2005. Again, although poverty fell, this is still a high figure and needs to be addressed.

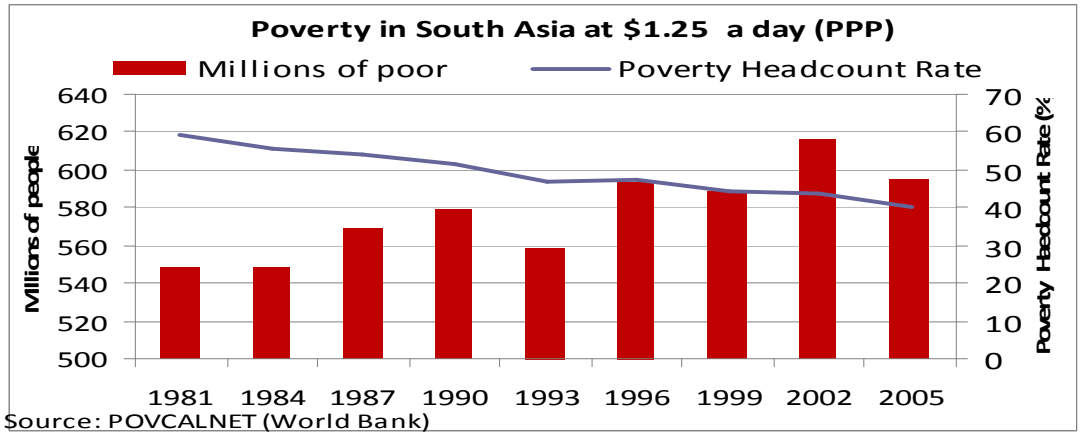


Figure 1-8: Poverty in South Asia at $1.25 a day (PPP)

1.1.4 Economic growth

Rapid and sustained economic growth is a central concern of economists and policy makers. One of the most important issues of economic literature is to explore the course of economic

growth and investigate the factors that determine it. This issue has been receiving considerable attention for a long time and is likely to continue to be the most important topic in future. In fact, it is true that the inspiration for the whole subject of economics is based on on the research on this particular topic. The father of economics, Adam Smith, addressed questions about the causes of variations in wealth across nations, as the title of his famous work, An *Inquiry into the Nature and Causes of the Wealth of Nations,* indicates. Now, even after more than 200 years, determining the causes of growth differences across nations or within a nation over time is still an interesting issue. In fact, this question has been addressed again and again by economists. One of the most important causes of cross-country growth differences is the role and importance of income inequality. The question whether growth impact of inequality is positive or negative has long been an active topic for research among economists and policy makers. However, theoretical and empirical research into the economic growth effect of inequality has produced very mixed results.

On the one hand, theoretical studies by Kaldor (1957), Saint-Paul and Verdier (1993) and Galor and Tsiddon (1997a, 1997b) predict a positive growth impact of inequality through incentives, physical capital accumulation, saving rates or investment indivisibility mechanism. On the other hand, theoretical studies by Galor and Zeira (1993), Alesina and Rodrik (1994), Persson and Tabellini (1994), and de la Croix and Doepke (2003) predict a negative growth impact of inequality. The negative growth impact of inequality comes about through socio-political instability, imperfections in credit markets, fiscal redistribution and distortion, and fertility differential channels. Thus, extant theoretical literature does not provide a definite relationship between inequality and growth.

Similarly, on the empirical side, findings on the growth impact of inequality are also mixed, at best. On the one hand, Partridge (1997), Li and Zou (1998), Forbes (2000), and Lundberg and Squire (2003) provide empirical evidence that the growth impact of inequality is positive, while, on the other hand, Alesina and Rodrik (1994), Persson and Tabellini (1994), Wan, Lu and Chen (2006), and Sukiassyan (2007) provide empirical evidence that the growth effect of inequality is negative. However, Barro (2000) shows that the growth impact of inequality is insignificant in a large sample of both developed and developing countries.

International trade is another important factor which plays a critical role in determining cross-country variations in growth. Assessing growth performance in an open economy is an issue of considerable debate and interest. However, neither theoretical nor empirical studies have provided a definite conclusion about the growth impact of trade (see, for example, Edwards, 1993; Lopez, 2005 for further details). Theoretical research on growth and trade suggests that long term economic growth may benefit from increased international trade because trade facilities technological advancements in importing countries and it also extends market size (see, for example, Grossman and Helpman 1990, 1991; Baldwin et al., 2005; Alesina et al., 2000; and Bond et al., 2005).

Some theoretical studies, on the other hand, suggest a negative impact of increased trade on economic growth. If some economies specialise in those sectors where comparative disadvantage holds then increased trade can hamper long-run economic growth (Grossman and Helpman, 1990, 1991). In this respect, Redding (1999) points out that trade openness might contribute adversely to long-run growth, if an economy specialises in those sectors where dynamic comparative disadvantages hold. Similarly, trade might contribute negatively to long-run growth if economies specialise in those sectors where learning by doing and innovation opportunities have largely been exhausted (Lucas, 1988; Young 1991). In such a type of economy, protection in selected sectors can foster long-term economic growth.

To this end, this study raises a noteworthy question as to why growth effects of inequality and trade vary across developing countries and investigates the deeper causes of negative growth effects of trade and inequality. In particular, this study investigates the role of variations in cross-country variations in credit market imperfection and initial inequities in determining growth effects of inequality and trade.

In sum, this thesis is motivated by the need to provide further perspectives in the corruption, inequality, and economic growth debate. This is achieved by investigating further potential avenues through which the causes of corruption can be explained. Thus, rather than simply examining the existing causes of corruption, this study specifically investigates new avenues of corruption which have been ignored in the existing literature. Similarly, this study seeks to provide a deeper understanding of cross-country variations in inequality, poverty and growth,

with a particular focus on the role of globalisation and taking non-linear relationships into account.

1.2 Research Questions

In the light of the background to the study and motivation, this study seeks to address the following questions in Chapters Three and Four: (1) Does having the military in politics foster corruption across nations? (2) Does the role of military in politics cause have a different effect on corruption depending on the existing level of corruption? (3) Does high financial intermediation reduce corruption? (4) Is the relationship between high financial intermediation and corruption perhaps non-monotonic? (5) Do spatial corruption, regional panels and past levels of corruption matter in shaping the link?

In Chapters Five and Six, which investigate the cross-country variations in inequality, poverty and growth, we address seven key issues: (1) Does economic growth benefit different economic actors equally or does it comes at the cost of increased inequality leaving some in society poorer? (2) Is the effect perhaps different over the path of development in the long run? (3) Does globalisation have spillover benefits which are shared equally? (4) What is the role of government in the process - does government spending reduce potentially existing inequalities and poverty? (5) Is inequality harmful for growth? (6) Does the effect of inequality on growth vary over the path of development and across regions? (7) Does the impact of trade on growth depend upon the existing level of inequalities in developing countries?

1.3 Aim and Structure of the Thesis

The aim of this thesis is to investigate various avenues of corruption in an attempt to reach a better understanding of the causes of corruption. In particular, the thesis will empirically examine the implication of the military in politics in breeding corruption and the complementarity between financial development and corruption reduction across countries. The thesis also improves our understanding of cross-country variations in inequality and

growth with, a particular focus on the role of globalisation and the importance of domestic policy reforms.

To achieve this aim, the thesis will contain four core empirical chapters (essays) in addition to an introductory chapter, literature review chapter and a concluding chapter. The four empirical chapters can be considered different from one another. The first two empirical chapters will address the causes of corruption. In particular, the first of these two chapters will assess the role of the military in politics in determining corruption levels, and investigate how important financial development is for corruption. The other two empirical chapters will provide a deeper understanding of cross-country variations in inequality, poverty and economic growth.

Second chapter is entitled *Review of Literature: Causes of Corruption.* This chapter provides a systematic review of the literature in addition to definitions and measurement issues of corruption. One important contribution of the second chapter is that it provides a detailed review of literature on causes of corruption in developed European countries using diverse sources. To best of our knowledge, a systematic and comprehensive review of literature on corruption in the developed European countries is absent from the literature on corruption.

The third chapter is entitled C*orruption and the Military in Politics: Theory and Evidence from around the World*. This chapter will theorise the role of the military in politics and empirically test the hypothesis that the military in politics may positively influence corruption levels across countries, as the presence of soldiers in politics causes power and wealth maximisation that may breed corruption, and civilian-dominated governments may help militaries to extract wealth as a reward for their loyalty and support for regime stability. The analysis and evidence in this chapter will be used to as a robustness check for the next empirical chapter, which will investigate whether financial intermediation has an influence on corruption.

The fourth chapter is entitled *Corruption and Financial Intermediation in a Panel of Regions: Cross-Border Effects of Corruption*. This chapter empirically tests the hypothesis whether financial reforms help in combating incidence of corruption levels. This chapter also takes account of non-linear nature of the relationship between financial liberalisation and corruption. In addition, this chapter models the role and importance of the contagious nature of corruption.

This chapter aims to demonstrate the importance of complementarity between financial development and corruption reduction.

The other two empirical chapters will study the distributive and poverty effects of globalisation and the contribution of inequality to economic growth. The first will investigate the role played by globalisation in determining the cross-country variations in inequality and poverty; i.e., this chapter tests whether globalisation has favourable effects on developing countries. The chapter aims to demonstrate the importance of a non-monotonic relationship between economic development and inequality and the response of developing countries to the globalised world. This chapter is entitled *Distributional Consequences of Globalisation: A Comparative Dynamic Analysis*.

The second chapter will investigate the role played by inequality, trade and some other important factors in determining the cross-country variations in growth; i.e., this chapter tests whether inequality has favourable effects on developing countries. This chapter aims to demonstrate the importance of an optimal level of inequality and the response of more segregated developing countries to the globalised world. This chapter is entitled *Economic Growth, Inequality, Trade and Credit Market Imperfections: A Cross Country Analysis.*

2. Review of Literature: Causes of Corruption

2.1 Background

Corruption is an ancient problem which has existed for many centuries. Wesson (1968) notes that corruption has existed from the time when the first manifestation of the huge, elaborate and self-serving apparatus of the state came into existence as far back as the Egyptian Old Kingdom. It is widely accepted among scholars and policy makers that widespread economic and political corruption triggered the demise of great empires of the past. Many autocratic and tyrannical regimes suffered from ill-advised practices and corrupt activities.

Corruption was pervasive in the times of the Roman and Greek empires (MacMullen, 1988). Webber and Wildavsky (1986) note that corruption of tax collection was so great at that time that it was found useful to privatise tax collection by auctioning rights to collect taxes. Current governments have their genesis in earlier structures which were 'rotten to the core'. Now, corruption scandals emerge from in walks of life, including business, politics and government. The sums range from small payments to bribes running into millions of dollars.

Philosophers, scholars and policy makers have grappled with corruption over many centuries. Despite anti-corruption solutions, it could not be eliminated completely and in fact it has managed to survive and perpetuate itself, and therefore still exists. Although its appearance, degree and manifestations have altered through the centuries, worldwide existence and perseverance are its defining characteristics. In recent years, elimination of widespread corruption has been a key concern of domestic governments and international organisations.

The literature on corruption is diverse and growing, as researchers from different academic disciplines such as sociology, law and politics are increasingly interested in studying its causes and consequences. Corruption has attracted attention in the main stream of economics over past few decades as economists are ever more interested in understanding the structure of organisations and agency problems. The growing interest on the part of economists in understanding corruption in recent years can be traced back to the pioneering work of Rose-Ackerman (1975, 1978). Texts on the economics of organisations and microeconomics are

increasingly likely to include a discussion of corruption (Brickly et al. 1996) and agency problems (Kats and Rosen, 1994).

2.2 Defining Corruption

Corruption takes on different forms and functions in different contexts, as it is a complex and multifaceted problem with multiple causes and effects. The incidence of corruption ranges from a single act of an illegitimate payment to the widespread malfunction of a political and economic system. The problem of corruption has been viewed either as a norm, an individual moral problem, or as a structural problem of economics and politics. As a result, definition of corruption ranges from the broad terms of 'misuse of public power' and 'moral decay' to strict legal definitions as an act of bribery and a transfer of tangible resources (Andvig et al., 2000).

Corruption is a growing area of study in various academic disciplines such as law, sociology and economics. In fact, the study of corruption is by its nature multidisciplinary and dispersed, ranging from detailed reports of single corruption scandals to universal theoretical modelling. Researchers study it as a problem of economic, social, political, cultural or moral decay or, in most cases, as a combination of these factors. The complex and multifaceted nature of corruption has given rise to agreement in academic and policy circles that it pervades many societies and there are no 'quick fix' solutions to it.

When individuals representing state and public authority seek private wealth maximisation by misusing public resources then such behaviour is usually understood and referred to as corruption. The World Bank (1995), Transparency International (1998) and others use the following working and encyclopaedic definition of corruption: it is the abuse of public power for private benefit (or profit). Corruption is also referred to as a transaction between public and private agents through which collective goods are illicitly exchanged for private payoffs (Heidenheimer et al., 1989). Rose-Ackerman (1978) also emphasises the same point by arguing that corruption exists at the interface of the public and private sectors.

Nye (1967, p. 416) defines corruption as "behaviour that deviates from the formal duties of a public role (collective or appointive) because of private-regarding (personal, close family, private clique) wealth or status gains". An updated version with the same elements is the definition by Khan (1996, p. 12) corruption is "behaviour that deviates from the formal rules

of conduct governing the actions of some one in a position of public authority because of private-regarding motives such as wealth, power, or status."

Huntington (1968) points out that scarcity of political opportunities generates corruption as individuals use wealth to buy power and when political opportunities are few then incidents of corruption occur as political power is misused to pursue wealth.

2.2.1 Rent seeking and corruption

Coolidge and Rose-Ackerman (2000) states that the term 'rent-seeking' is often used in place of corruption and there is a large area of overlap. However, corruption is 'a misuse of public power for private gain' while rent-seeking is derived from the economic term 'rent' i.e. earnings in excess of all relevant costs, and equals monopoly profits. Rent-seeking is not necessarily illegal or considered as immoral in a society, or necessarily uneconomical if reinvested productively. However, in practise, it is largely unproductive, wasteful and economically inefficient.

2.2.2 Basic economic analysis of corruption

Becker (1968) originally developed a standard economic model of crime which is useful for the economic analysis of corruption. According to this model, individuals carry out a cost-benefit analysis of corruption. The expected benefits could be in the form of bribes, favours and payments in kind while costs could be in the form of probability of being detected and the monetary sum (or equivalent) of the punishment should they be convicted. Corruption is likely to occur if the net expected gain is positive.

2.3 Measuring Corruption

Since corruption by its nature is a secret and illicit activity, it is difficult to obtain precise information on the degree of corruption in a country. This difficulty is also a barrier to the classification of countries according to their relative levels of corruption. Despite this difficulty, useful insights into the incidence of corruption can be obtained by surveying experts and firms in a country. Although it is difficult to quantify corruption, we know it when we see it. There are many survey-based corruption perception indices that are currently becoming increasingly available. We will discuss three of them because they cover a relatively large sample of countries and they have been used in research studies.

(a) International Country Risk Guide (ICRG) Index.

Political Risk Services, a private investment risk service, produce this index every year since 1982. The ICRG corruption index is apparently based on the opinions of experts and is supposed to capture the extent to which "high government officials are likely to demand special payments and to which "illegal payments are generally expected throughout lower levels of government" in the form of "bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans."

(b) World Bank Corruption Index

The World Bank provides six indictors of governance, known as Worldwide Governance Indicators (WGI). These indicators are based on the views of a large number of enterprise, citizens and expert survey respondents in developing and industrial countries. The individual data sources for the aggregate measures are taken from a diverse variety of survey institutes, think tanks, non-government organizations, and international organization. One of these indicators is Control of Corruption (CC) which is widely used in academic research.[7] The CC index ranges from -2.5 to 2.5 where -2.5 indicates an absence of corruption while 2.5 shows full scale corruption. The CC index 2006 is based on 33 surveys and expert assessments from 30 institutions. A detailed discussion on the methodologies of the CC index is available in Kaufmann, Kraay and Mastruzzi (2010).

(c) Transparency International (TI) Index

Transparency International, an international nongovernmental organization dedicated to fight corruption worldwide, produces this index every year since 1995. The main objective of the Corruption Perception Index (CPI) by TI is to provide data on extensive perceptions of corruption with in countries. The CPI bases on a weighted average of approximately ten surveys of business people and assessments by country analyst. Using different methodologies and diverse sampling frames, the CPI consists of credible sources. It ranks countries on a one-to-ten scale where one is the least corrupt while ten is the most corrupt.

[7] The other indicators are: Voice and Accountability; Political Stability; Government Effectiveness; Regulatory Quality and Rule of Law.

The CPI has different advantages and disadvantage as it bases on a survey of surveys. The averaging process used to produce the TI index may reduce the measurement errors, if the measurement errors in different surveys are independently and identically distributed (iid), however, iid assumption may not hold. In addition, the averaging process may introduce new measurement errors when cross-country rankings are produced, since different surveys cover different subset of countries. It is important to note that TI indexes should not be used to measure changes in corruption level over time for a particular country as TI indexes in different years are derived from potentially different set of surveys,

The next section reviews the literature on causes of corruption with particular focus on those causes which have been disputed or received least attention such as trade openness and role of remittances in determining corruption.

2.4 Historical roots of corruption

Scholars consider historical factors as important roots of the existing levels of corruption. For instance, legal theories suggest that quality of government, including corruption, depends on the kind of law codes that are in place. In history, common law legal codes have their origins in the efforts of property owners to restrict the discretionary power of the Crown (Glaeser and Shleifer 2002). In addition, it is also suggested that independent judiciary systems in those countries which adopt British law play an important role in curbing corruption (see for more details, La Porta et al., 1999)

2.4.1 British colony

Historical roots of corruption also can be traced in countries which were former British colonies. Theory sees former British colonies as having better civil services because of the influence of the British bureaucracy. Scholars note an almost obsessive focus on the procedural aspects of law in Britain and some of its former colonies. In Eckstein's words, "The British . . . behave like ideologists in regard to rules and like pragmatists in regard to policies. Procedures, to them, are not merely procedures, but sacred rituals" (Eckstein, 1966, p. 265). According to this system, British servants focus procedural aspects of the law, which increase the ability of subordinates and judges to challenge hierarchies to enforce the law. A threat to hierarchies clearly increase the chances that official corruption will be exposed (Treisman, 2000).

Colonial heritage of a nation is also linked with the incidence of corruption. This variable captures "command and control habits and institutions and the divisive nature of the society left behind by colonial masters" (Gurgur and Shah, 2005, p. 18). Empirical evidence on this variable shows conflicting effects. On the one hand, countries with colonial heritage tend to suffer more from corruption (Gurgur and Shah, 2005) while on the other hand countries with a long heritage (British colony) tends to be clean countries (Treisman 2000).

Another historical factor which influences corruption is legal system of a country. According to La Porta et al., (1999) countries which adopted common law systems seem to have more effective judicial system than those who adopted civil law system. Treisman (2000) notes that common law system and former British colonies have overlap but it is not perfect, therefore he examines the separate influence of common law on perceived corruption and finds out that those countries which adopt common law systems tend to be less corrupt.

The linkages between history and corruption are not simple and remain to be fully studied in the literature (see Lambsdorff, 2006, p. 22). However, one of proposed links between history and corruption is the role of historical precedents and customs that might shape institutions and cultural norms in a country (knack and Keefer, 1995; Lambsdorff, 2006; and Paldam 2002). This link implies that established practices and norms in old countries might be difficult to abandon and it also implies that many of these established practices might be viewed as corrupt over time by outsiders. Corruption in these economies might be considered a norm of doing business and thus might have become socially acceptable. This all means, over time, potential bribe-givers become familiar with the mechanism of offering bribes (see Lambsdorff and Teksoz, 2004). On the other hand, it is also possible that enforcement mechanism and institutional strengths might be well established in old countries, thereby making corruption less likely. Using a sample of European countries, recently, MacDonald and Majeed (2011) investigate the role of history of a country in determining current corruption levels. There study does not find significant influence of history on corruption however combined effect of the history of a nation with law or political stability significantly explains corruption.

2.4.2 Religion

Another way in which historical traditions and cultures might affect the corruption is thorough the influence of religion (Treisman, 2000). Protestant religion is less hierarchical in

comparison to other religions (such as the orthodox and catholic churches and Muslims). The Protestant church arose in part as opposition to state sponsored religion and played a role of opposition to the abuses of the government (Treisman, 2000). Tresiman (2000) finds a negative influence of the Protestant tradition on corruption.

2.4.3 Ethnic and linguistic fractionalization

Theories consider ethnolinguistics fractionalization as long-living cause of corruption such as Mauro (1995) notes that countries which are more ethnically fractionalized tend to be more corrupted. In ethnically divided societies state officials and politicians tend to favour those people which belong to their own ethnic group.

The empirical evidence, nevertheless, is not clear. La Porta et al. (1999) find that governments in more ethnically divided societies exhibit poor performance while Treisman (2000) does not find evidence that linguistic fractionalisation has a direct effect on corruption. In a recent study, Alesina et al. (2003) finds that ethnic and linguistic fractionalization has a significant effect on corruption that is corruption is higher in nations which are ethno-linguistically diverse.

2.5 Contemporary causes of corruption

In this section we review the theories which describe the contemporary causes of corruption such as economic, political and institutional aspects. These theories are more useful for anti-corruption policies compared to the theories based on historical factors because some of factors among the causes of corruption are policy amenable.

2.5.1 Income levels

There are a number of ways through which income levels may affect corruption. The high-income countries can expected to afford high quality institutions. In addition, many factors such as education, urbanization, access to mass media and depersonalized (‘arm’s-length’) relationships are closely associated with higher income levels and they diminish the tolerance of the public toward corruption. The recognition that corruption violates the broader between the public and private sphere also depends on the level of development. The principle of ‘arm’s-length’ implies that economic decision involving more then one party should not be manipulated through personal relationships. All economic agents should be treated on equal bases which is necessary condition for a well functioning market economy.

Corruption violates the principle of 'arm's-length' and causes inefficiency and unpredictability in transactions (Schleifer and Vishny, 1993; Myrdal, 1968). This insight can be explained as follows (Paldam, 1999): from household's perspective demand for honest behaviour is high at higher income levels while from firm's perspective 'honesty' saves time that becomes more important when countries grow rich. Thus, honesty is hypothesised as production factor. Another important reason to believe that economic development reduces corruption is social stigma. It is argued in the literature that social stigma changes with economic development process. For instance, Ekpo (1979) notes that social stigma may be lower in societies where lines between public and private are not clearly drawn and gifts are not clearly differentiated from bribes.

Economies which are at lower levels of economic development generate minimal wealth for the average citizen which, in turn, breeds structural motivation for corrupt behaviours. Economic insecurity, if not out right poverty, in low-income economies implies that a marginal supplement to income of an average citizen can considerably improve living conditions. In other words, marginal value of money is greater in poor economies as compared to wealthy economies. The higher utilities attached to marginal incomes affect both bribe givers and takers: paying a bribe is worth if gains are greater than costs. In fact, government jobs that provide the opportunity of extra income supplements become attractive.

2.5.2 Size of government/control of economy and corruption

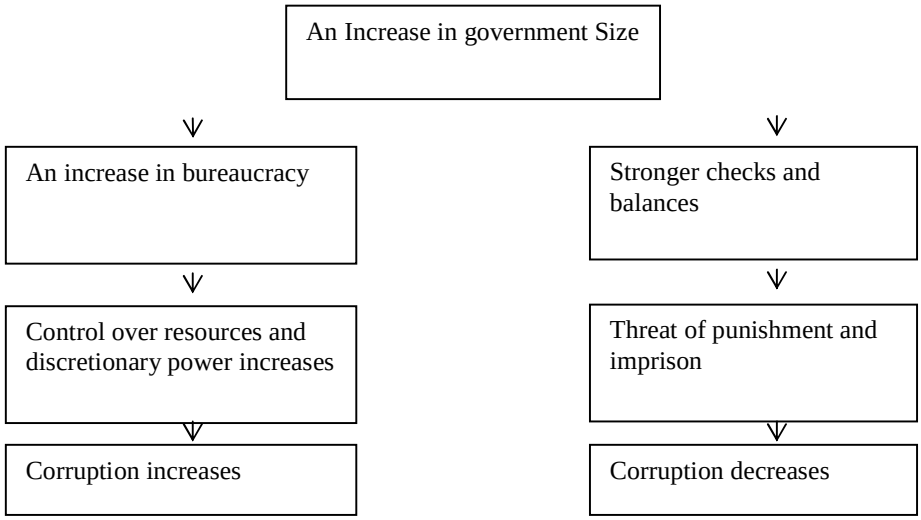
In the case of imperfect competition or when government intervention restricts free entry, rent-seeking literature emphasizes the link between corruption and opportunities for individuals to gain access to sources of higher than average rent (see Rose-Ackerman, 1999). From this point of view, a reduction of non-generic state regulation is useful for fight against corruption. Therefore, corruption is expected to be associated with the intervention of government (Chafuen and Guzmàn, 1999; Acemoglu and Verdier, 2000). An increased participation of the state in the economy gives leverage to state officials in giving access to economic resources and opportunities, thereby increasing the likelihood of corruption (Tanzi, 1998). This mechanism is strengthened if state officials receive lower salaries. Van Rijckeghem and Weder (2001) explore this issue and find the evidence that lower salaries cause a significant effect on corruption.

Thus, on the one hand larger governments may increase corruption because of a greater bureaucracy and red tap and also more opportunities to seek bribery (Rose-Ackerman 1999). While on the other hand, larger governments can spend more resources on law enforcement and can also spend more resources on checks and balances. It means larger governments might effectively control corruption (La Porta et al., 1999). Tresiman (2000) provides rather indecisive evidence of the size of the government in affecting corruption.

Table 2-1: Government Spending and Corruption

(1). Government Spending Deters Corruption				
Authors	Subject	Data	Econometrics Technique	Sample Size
Fisman-Gatti (2002),	Decentralization and Corruption	Cross sectional 1980-1995	OLS, 2SLS	59
Montinola and Jackman (2002)	Sources of Corruption	Cross sectional 1980-83 1989-92	OLS	66
Bonaglia et al. (2001)	Globalisation and Governance	Cross sectional 1984-1998	OLS, OLS (IV)	-
La Porta et al., (1999).	Quality of Government	Cross sectional different year, mostly 1990s	OLS	47-152
(2). Government Spending Encourages Corruption				
Authors	Subject	Data	Econometrics Technique	Sample Size
Ali-Isse (2003)	Determinants of Economic corruption	Cross sectional 1982-90,1995-99	OLS	-
(Rose-Ackerman, 1999)	Corruption and Government	Theoretical Study	-	-
(3). Government Spending is insignificant for Corruption				
Authors	Subject	Data	Econometrics Technique	Sample Size
Montinola and Jackman (2002)	Sources of Corruption	cross sectional 1980-83 1989-92	OLS	66
Pellegrini-Gerlagh (2008)	Causes of Corruption	Cross sectional 1994-2003	WLS	106

Theory of Government Spending and Corruption



2.5.3 Political indicators

The political factors capture the democratic environment of a country, the effectiveness of its judicial system and the origin of its legal system. The role of an established democracy has been highlighted in several studies of corruption (see, among others, Treisman, 2000, and Paldam, 2002). It is widely believed that corruption is related to the deficiencies of the political system and that an established democracy, by promoting political competition and hence increasing transparency and accountability, can provide a check, albeit an imperfect one, on corruption. Other characteristics of the political environment, including electoral rules (Persson et al., 2003) and the degree of centralization (Treisman, 2000, and Fishman and Gatti, 2002) may also be important in explaining corruption.

The judicial system also helps in controlling corruption (Becker, 1968). Efficient and strong legal systems with well specified boundaries protect property rights and provide firm framework for economic activities. Contrary to this, weak legal systems can effectively enforce contracts and undermine free market mechanism, thereby reducing incentives for agents to participate in productive economic activities.

2.5.4 Political stability

Political stability is another important variable that affects corruption levels. It is widely accepted in academic circles that corruption is rooted form political deficiencies. An established democracy promotes political competition, transparency and accountability (to the voter), thereby reducing corruption. If we look at democracy, from dynamic point of view

instead of procedural, it leads us to political stability. On the one hand, political stable administrations create productive incentives for bureaucrats because they face less chances of dismissal and find more opportunities for long-term development of their official careers. It means political stability motivates bureaucrats to build an open and honest reputation for career advancement. On the other hand, a secure position in bureaucracy may help maintain 'patronage and corruption' reputation and relations (Treisman, 2000).

One of the important elements that determine pervasiveness of corruption in public sector is defined as 'public morale' that reflects faith in country administrators (such as politicians and policy makers). In economies where polices are unanticipated or policy makers renege on their commitments or policy changes are not pure democratic, the economy creates economic chaos that, in turn, negatively affect public morale. This study proxy the economic chaos with high inflation rates because high inflation rates reflect macroeconomic imbalances. Another outcome of high inflation rates is redistribution of national wealth that may lead to a further drop in the public morale. (Paldam, 2002; Majeed and Macdonald, 2010). In the literature high inflation rates are also used as a proxy for political instability.

2.5.5 Trade openness and corruption

Analyzing how trade openness impacts governance and how it spurs or curbs corruption implies to clearly diagnose causes and effects of corruption and to take into consideration various factors. To carry out that we need to depart from basic stylized facts to more complex theories and empirical evidence. In this section we try to answer the key question why and how trade openness influences the level of perceived corruption in a given country? Apparently, an assessment of direct relationship between openness to trade and corruption seems difficult, however rent seeking literature provides the base to develop sound theoretical linkages between two.

Krueger (1974) provides the first mechanism between rent seeking activities and imports restrictions. The quantitative restrictions on imports, in contrast to tariff, and other official permissions to imports, generate considerable opportunities for economic rent seeking activities because of monopolistic powers entitled to legal importers. In order to exploit these opportunities, agents may legally compete or illegally seek rent seeking activities such as smuggling, black market, bribery and corruption. Krueger (1974) confirms that these rent seeking activities force an economy to operate at a level below its optimal and lead to

deviation between social and private costs and hence cause a welfare cost in addition to trade restrictions.

In successive academic papers, Bhagwati and Srinivasan (1980) and Bhagwati (1982), have extended Krueger's concept of rent seeking activities to a whole array of Directly Unproductive, Profit-seeking (DUP) providing further arguments in favour of free trade. Recently Gatti (1999) provides empirical evidence of the explicit relationship between restricted trade and corruption. Indeed, the author detangles two effects of inward looking policies on corruption: the "direct policy distortion" and the "foreign competition effect". Where direct policy distortion implies that high restrictions to free trade encourage private agents to seek favouritism from public officials offering bribes. And foreign competition effect implies that high barrier to international transactions hamper competition between domestic and foreign firms, such a decline in competition leads to high margins for corruption and rent seeking.

In another study, Ades and Di Tella (1997), provide further insights into the corruption-rent seeking mechanism. They present evidence that the level of rents in general and market structure in particular determine the intensity of corruption in an economy. They argue that variation in rents size as a result of changes in competition cause ambiguous effects on corruption. On the one hand, lower levels of competition provide opportunities to bureaucrats to extract more rents from the firms they control. On the other hand this situation also implies that it is more valuable for the society to avoid corruption and increase the accountability and monitoring of its bureaucracy. Theoretically, net impact of competition on corruption is ambiguous. Investigating the net impact of these two possible tendencies requires empirical test.

However, real world exhibits some examples of possible association between both. For instance, Nigeria provides a striking example of positive association between rents and corruption. In 1980s, oil exports of Nigeria generated 80% of government revenue and created extraordinary opportunities for corruption. Ades and Di Tella (1997) develop a model based on three types of variables that determine corruption: wages of the bureaucracy, the level of monitoring by civil society and the level of profits of domestic firms. In order to capture bureaucratic wages and monitoring, their study uses general level of economic development

(GDP per capita, schooling) and political development (Gastil index of political rights). They proxy degree of competition with the share of imports in GDP, the concentration of fuels and mineral exports in the composition of total export and the distance from the world's major exporters. Evidence of their study suggest that corruption is higher in countries where domestic firms are less exposed to foreign competition or countries with concentrated exports.

Wei (2000) advances a final third mechanism on the relationship between globalisation and quality of institutions by explicitly evaluating differences in the costs and benefits of monitoring government officials. The central idea is that quality of institutions and their capacity to curb corruption crucially depend on the resources a country allocates to this end. A country chooses to invest more in building good public governance when benefits are larger or costs are smaller.

Since international investors and traders can easily divert their businesses from one country to another than domestic ones, corruption and bad governance discourage more strongly to business decisions of foreign stake holders than domestic one. Such a diverse effect of corruption between domestic and foreign stake holders justifies strong corruption reducing policies in relatively more open economies. Given resulting larger benefits, an economy that is more exposed to international markets would find it optimal to allocate more resources to building good institutions and end up with a lower level of corruption than a less open inward-looking one.

These implications of the model depend on two key assumptions. First, the impact of corruption on international transactions is stronger than domestic ones. Wei (2000) justifies this assumption arguing that international investors enjoy stronger bargaining power relative to domestic procedures. Furthermore, enforcement costs for international contracts increase more steeply with bad governance. Second, assumption about direction of causality implies that openness is exogenous and it comes before corruption.

Does trade openness increase corruption and if so, how? The answers to this question can be traced from the initial experience of erstwhile and USSR and transitional economies of Eastern Europe "where essential steps to privatize the economy and rewrite the rules of commerce after the demise of socialism were often accompanied by widespread corruption"

(Transparency international, 2005, p.271). Trade liberalisation introduces and increases imports of new goods and services. The availability of a variety of imports increases the marginal utility of income of consumers if they have a desire for a variety of goods. This effect is likely to be more significant in developing countries which lack the ability to produce a variety of goods and services domestically. Similarly, increased imports of different goods increase the marginal utility of bribe income for custom officials, thereby increasing incentives for bribe-seeking.

Trade openness may also generate new opportunities for corruption. Tanzi (1998) reports that trade liberalisation has created new opportunities for corruption as paying bribes gives advantages in obtaining foreign contracts or privileged access to markets, or some specific gains such as tax incentives. Paying bribes maximises the mutual interests of politicians and firms. Politicians want to stay in office by re-election and they need money to finance their campaigns, while firms need business incentives. Thus, politicians have an incentive to award contracts or other benefits to those firms that pay them bribes.

Small countries trade more as they produce fewer goods internally. Market discipline, in an open economy, improves governance. However, this argument is not necessarily true as it ignores the possibility that small size increases the per capita rent, which motivates custom official to extract more bribes for the aforementioned reason that a small nation trades more and imports of a variety of goods, creating incentives for corrupt behaviour of custom officials. Therefore, greater openness could lead to a higher incidence of corruption.

Hisamatsu (2003) contributes to the literature on corruption by finding the importance of foreign demand for corruption through trade. He tests the argument that countries trading with corrupt countries also import corruption. The empirical findings of his study confirm the proposition. It is usually considered that corruption is explained by domestic factors. Since corruption is an outcome of demand and supply, foreign demand for corrupt acts, other than domestic factors, can also affect the level of corruption in an importing country. Torrez (2002) examines the relationship between trade and corruption to test the argument that restricted trade shifts resources from productive activities to rent- seeking activities such as corruption. The study shows that a negative relationship holds for most of the empirical evidence, but this relationship is not robust.

Recently, using a panel data set for 146 countries over a long period, Majeed (2011b) contributes in the area of trade-corruption linkages by discovering a presence of threshold and significance of complementary policy reforms in shaping the link. The study suggests that in a linear specification openness to trade is corruption increasing while its effect is negative in a non-linear specification. The author exhibits that this non-linear nature of the relationship is worth noting and lend support to answer the question why previous empirical results of the relationship between the degree of openness to trade and corruption index are so different from one another. Furthermore, he finds empirical support to the proposition that this is not just openness to trade that can reduce corruption but there are complimentary policy reforms that cause a decline in corruption. The analysis shows that the combined effect of trade openness and high bureaucracy quality or financial reforms are corruption reducing.

The vast majority of studies summarized in Table 2.2 appear to conclude that trade openness decreases corruption thus rejecting the hypothesis that trade openness could increase corruption.

Theory of Openness and Corruption

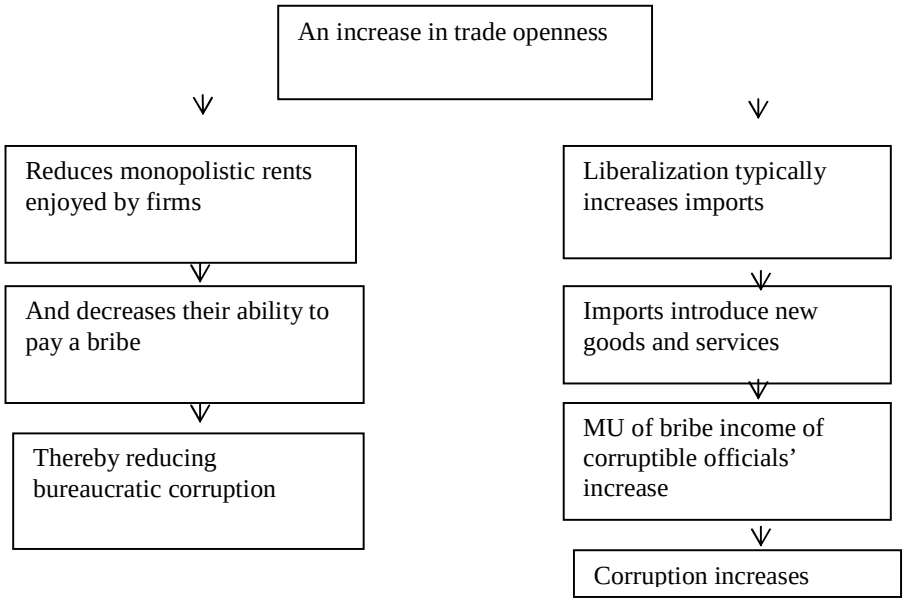


Table 2-2 Trade Openness and Corruption (Trade openness decreases corruption)

Authors	Subject	Data	Estimation Technique	Sample	Non linearity	Policy complimentary
Gatti (2004)	Corruption and openness	Simple Pooling 1982-2000	OLS	-	No	No
Knack-Azfar (2003)	Trade intensity and corruption	Cross sectional 1995-99	OLS	40-98	No	No
Persson et al. (2003)	Electoral rules and corruption	Cross sectional & Panel1990s	OLS	80	No	No
Fisman-Gatti (2002)	Decentralization and corruption	Cross sectional 1980-1995	OLS, 2SLS	59	No	No
Bonaglia et al. (2001)	Globalisation and governance	Cross sectional 1984-1998	OLS, OLS (IV)	-	No	No
Frechette (2001)	Determinant of corruption	Panel data 1982-1998	Fixed Effects	135	No	No
Wei (2000)	Corruption and global capital flows	Panel data 1994-96	Fixed Effects	99	No	No
Ades-Di Tella (1999)	Rents, competition and corruption	1980-83 1989-90	OLS, 2SLS	52, 31	No	No
Laffont and N'Guessan (1999)	Competition and corruption in a agency relationship	Theory	-	-	No	No
Leite-Weidmann (1999)	Natural resources and corruption	Cross sectional 1970-90	OLS, 2SLS	72	No	No
Trade openness increases corruption.						
Gurgur-Shah (2005)	Localization and corruption	Cross sectional 1997	OLS	30	No	No
You and Khagram (2005)	Inequality and corruption	Cross sectional 1996-2002	OLS, 2SLS	129	No	No
Trade openness is insignificant for corruption.						
Pellegrini-Gerlagh (2008)	Causes of corruption	Cross sectional 1994-2003	WLS	106	No	No
You-Khagram (2005)	Inequality & corruption	Cross sectional 1996-2002	OLS, 2SLS	129	No	No

Table 2-3 Main Empirical Studies on Determinants of Corruption (I)

Authors (Year of Pub.)	ED	G	Ed	NE	Op	Re	EL	BL	RL
MacDonald-Majeed (2011)	**-***	**-***			**+***				**-***
Rock (2009)	-*	-*		+	-		+	+*	
Pellegrini-Gerlagh (2008)	-*	+		+*	-	-*	-	-	
Dreher et al. (2007)	-*		-*		+			-*	-*
Serra (2006)	-*					-*			
Kunicova-R.Ackerman (2005)	-*								
Lederman et al. (2005),	-*						+*		
Gurgur-Shah (2005),	-*	-			+*		+		
Braun-Di Tella (2004)	-*				+				
Damania et al. (2004)	-*								-*
Alt-Lassen (2003)	-*		-*						
Brunetti-Weder (2003)	-*		-*				+		-*
Graeff-Mehlkop (2003)	-*								
Herzfeld-Weiss (2003)	-*								-*
Knack-Azfar (2003)	-*				-*				
Tavares (2003)	-*								
Ali-Isse (2003)		+*	-*						-*
Bruentti-weder (2003)	-*		-*		+*				
Persson et al. (2003)	-*		-**		-*	-*	-		
Fisman-Gatti (2002),	-*	-*			-		+		
Paldam (2002-01)	-*					-*?			
Swamy et al. (2001)	-*								-*
Frechette (2001)	+*		+*	-*					
Bonanglia et al. (2001)	-*	-*		+*	-*	-*	-*		
Wei (2000)	-*				-*				
Treisman (2000)	-*			+	-	-*	+*	-*	
Rauch-Evan (2000)	-*		-*						
Sandholtz-Koetzle (2000)	-*				-*	-*			
Ades and Di Tella (1999)	-*		-*	+	-*				
La Porta et al. (1999)	-*	-*			-	-	+	-*	
Goldsmith (1999)	-*								
Van Rijckeghem-Weder (1997)	-*		-*						

ED= Economic Development; G=Government Spending; Ed=Education; PR=Political Rights; NE= Natural Endowment; OP=Openness; Re=Religion; EL=Ethno-linguistic; BL=British Legal System; RL=Rule of law

Table 2-4 Main Empirical Studies on Determinants of Corruption (II)

Authors (Year of Pub.)	De	BC	F	Dc	PR	PI	EF	Pop	Inf
MacDonald-Majeed (2011)	**-***						**-***		**+***
Rock, Michael T (2009)	+/-*								
Pellegrini-Gerlagh (2008)	-*	-	-*	-*		+*			
Dreher et al. (2007)	-*								
Serra (2006)	-*	-*				-*			
Kunicova-R.Ackerman (2005)	-*			+*			-*		
Lederman et al. (2005)	-*		-*	-*					
Gurgur-Shah (2005)	-*	+*		-*			-*		
Braun-Di Tella (2004)	-*				+				+*
Damania et al. (2004)	-*			+*				+*	
Alt-Lassen (2003)								+*	
Brunetti-Weder (2003)			-*						
Graeff-Mehlkop (2003)							-*		
Herzfeld-Weiss (2003)	-*								
Knack-Azfar (2003)	-*							+*	
Tavares (2003)		+*						-*	
Ali-Isse (2003)				-*			-*		
Bruentti-weder (2003)			-*		+				
Persson et al. (2003)					-				
Fisman-Gatti (2002)				-*				+*	
Paldam (2002-01)	-*						+*		+*
Swamy et al. (2001)	-*	-*							
Frechette (2001)	-*								
Bonanglia et al. (2001)	-*								
Wei (2000)	-*			-*					
Treisman (2000)	-*	-*		+*	-	-*	-*		
Rauch-Evan (2000)									
Sandholtz-Koetzle (2000)	-*	-*					-*		
Ades-Di Tella (1999)	-*				+				
La Porta et al. (1999)									
Goldsmith (1999)	-*			+*			-*		
Van R-Weder (1997)	-*								

De= Democracy; BC= British Colony; F=Freedom of Information; Dc= Decentralization; PR= Political Rights; PI=Political Instability; EF= Economic Freedom; Pop= Population; Inf. = Inflation

2.5.6 Role of remittances in a recipient economy

Whether a remittance contributes positively or negatively to the macroeconomic performance of a recipient economy is a controversial issue in theoretical studies and many studies empirically assess the effect of remittances on the recipient economy's performance and reach different conclusion despite using the same data sources (see, for example, Barajas, 2009).

Remittance receipts may exert a negative influence on labour force participation for the following reasons. Since remittances inflows can be viewed as income transfer, individual recipients may prefer to switch this unearned remittance income with labour income. Chami, Fullenkamp, and Jajah (2003) argue that irrespective of the intended use of remittances, there are various moral hazard problems linked with remittance receipts. Remittance monitoring and management is extremely difficult because remittance senders and receivers are separated by a distance and remittances are sent under asymmetric information. Thus, moral hazard problems may induce an individual to spend resources on leisure and reduce labour work.

In a recent study, Barajas et al. (2009) argue that the availability of remittance inflows decreases the motivations for individuals to monitor and evaluate the domestic governments' policy performance. The remittance inflows create a moral hazard problem for the domestic government as the cost of poor performance of the domestic government is at least partially shifted to the remittance sender because whenever things go wrong at home, remittance transfers are likely to increase. The main point of this argument is that high remittance inflow may undermine good domestic governance. We focus this argument on a specific aspect of the quality of the domestic institution that is corruption. In future research this argument can be extended to alternative measures of the quality of institutions, for example, rule of law.

We extend the negative relationship of remittances and labour participation to the quality of domestic institutions. Individuals with high remittances do not take account of the quality of domestic institutions and prefer to solve economic issues through remittance senders and may use this unearned money to 'grease the wheels' for speedy work in public sectors.

Recently, Majeed (2011b) contributes in the existing literature on sources of corruption by analyzing the distribution of dependent variable (corruption). The results in this study support earlier findings in the literature on sources of corruption such as economic prosperity,

economic freedom, legal strengths and quality of the bureaucracy (all of these variables help significantly in combating corruption). In addition to confirming earlier findings, results of the study also provide new insights. Among the least corrupt countries, remittances do not appear to increase corruption but significantly promote corruption among most corrupt nations.

2.5.8 Other causes of corruption

Some other important causes of corruption are: decentralization, economic freedom, internet users and newspapers' circulation. The role of all these variables is considered to be negatively associated with corruption levels.

2.6. Survey of the Literature: Corruption in Europe

Having reviewed causes of corruption, now we discuss causes of corruption in European countries. This separate section is linked with earlier discussion in following ways. First, this section reinforces the point that corruption is also a problem of developed countries. Second, this section helps us in understanding the most important causes of corruption. Third, these sections together imply that corruption is a global curse with a varying degree in the developed and the developing world. In this section we systematically attempt to review the literature in relation to corruption in European countries using a number of research sources such as surveys, reports, academic articles, stylized facts, and scandals. Using extant literature we support the proposition that corruption is a growing threat in rich countries as well and now corruption has become global challenge.

In EU member states some nations are suffering more from corruption while some nations are relatively clean. Rapid economic transactions, labour mobility, uniform trade policies, widespread information are among the potential sources which shift cross-borders cultural and political norms within the member states. Since corruption by its nature is contagion, it is more likely to spread within EU countries. Here counter argument can be built that why we assume that corruption is a growing threat and why do we not suppose that contagion nature of corruption will potentially transfer anti-corruption norms from top clean economies to relatively corrupt economies, thereby reducing corruption.

Theoretically this is possible, however, in reality the situation is opposite for following reasons. First, the number of clean economies in EU countries is rather small while relatively corrupt economies are greater in number. Second, a number of evidence gathered in this section using reports, surveys, scandals, speeches, scholarly arguments, and facts from around the European countries prove that corruption on average is growing. Third, some countries recently joined EU such as Latvia, Hungary these countries are highly susceptible to corruption prone activities. Fourth, economies which are supposedly free from corruption are also suffering from corruption as recent corruption scandals have shaken them as well. Fifth, corruption indices show that on average corruption is increasing in European countries.

According to constitutional treaty 2004 of the European Union Member Sates, one core objective of European Union is to offer its citizens an area of freedom, security and justice without internal borders. The existing corruption and its growing threat is a major obstacle to meet this goal. The Eurobarometer surveys conducted in 2005, 2007, and 2009 remarkably show that majority of the Europeans believe that corruption is a major problem of EU member states.

In the intervening years of surveys, there are a number of corruption scandals emerged in member states, including Finland, Malta, Austria, Spain and UK. Many of these corruption scandals have involved public officials and politicians with wide media coverage both within country and across member states in EU. In the same period global financial crises have hit the European countries and their negative effects are still being felt which has put additional burden on the government of member states in EU.

Euro barometer (2009) reports that one main reason of corruption in Europe is lack of real punishment for corruption. The respondents form different European countries report this view: 58% in Slovakia, 41% in Spain and 37% in Sweden. Lack of transparency in public spending is another reason for corruption, Eurobarometer (2009) reports. The respondents from different European countries support this view: 41% in Latvia, 36% in Austria and 35% in the Netherlands.

The overall picture which emerges from the survey is rather negative as majority of the European believe that corruption is a major issue in their country and it persists in institutions

at every level. In addition, majority of the Europeans agree that corruption exists within European Union institutions.

Majority of the Europeans (seven out of ten) think that although corruption is inevitable but most respondents also think that government is not taking enough actions to control corruption. This is general consensus among Europeans that successful prosecutions to curb corruption are not sufficient and even when there are, the sentences declared by courts are rather lenient.

What is overall causing increase in perceptions of corruption in European countries? Emerging corruption scandals in member states are increasingly continuing in perceptions of corruption. One other reason could be the continuing economic impact of the financial crises, report says. Overall the main concluding message from the report is that "for the majority of Europeans, corruption continues to be seen as a major problem, and they believe more action needs to be taken to fight and prevent it."

According to the latest survey on corruption by Special Euro barometer (2009), 94% of the respondents in Cyprus believe that corruption is widespread in the police and wider public sector. One reason of perceived high corruption is appointments in public sectors are not based on merit, 54 % of the Cypriots agree with this reason. Another reason for high corruption is poor hold of law as 40% Cypriots believe that laws are not enforced while 43% believe that the lack of enforcement is not subject to any real punishment.

The Global Corruption Barometer (2010) has revealed that corruption in Portugal has increased during the past three years. The data shows that 83% of the Portuguese consider corruption has risen since 2007. Luís de Sousa, President of Transparência e Integridade (TIAC)[8] argues that "this worsening of people's perception of corruption in Portugal, is in part due to corruption scandals involving politicians and business people from the financial sector being more widely exposed in the media."

[8]Transparência e Integridade (TIAC) is Portugal's link to Transparency International in Portugal.

In June 2011, Transparency International UK (TI-UK)[9] has issued a research report which examines the levels of corruption in 23 sectors and institutions in UK. "The research report represents a 'corruption health-check for the UK' in which the diagnosis is 'growing threat, inadequate response'." The report shows that corruption is a much greater problem then recognized and there is an inadequate response to its growing threat. The report identifies following sectors and institutions where corruption is particularly prevalent: prison system, political parties, parliament and sport.

The report suggests that we lack knowledge of the full extent of corruption in the UK, particularly in key sectors and institutions. The inadequate, uncoordinated and incoherent policy response has caused a culture of impunity in certain areas. Although corruption is not endemic in the UK and also key pillars of the UK's national integrity systems are robust but they are not free form weaknesses. In fact some of the most trusted institutions are vulnerable and there are insufficient steps to diagnose and cure corruption.

The report provides shocking finding on the links between organised crimes and incidence of corruption in the UK. The organized criminals have targeted UK Border Agency, police and prison. They exploit social housing to facilitate prostitution and drug trafficking or to house illegal immigrants. The employment of illegal workers damage free competition in labour market and it is considered a single largest corruption threat to the construction sector. The involvement of key officials into corruption in above mentioned areas allow wrong-doing.

According to the report, 53.4% of respondents believe that corruption has increased in the last three years. The report also highlights the corruption risks related to government policy. The cut in government spending in specific areas and rapid institutional changes may create an environment that largely increases the risk of corruption.

The report discovers organized crime as a root cause of graft in Britain. The organized criminals have targeted staff of the UK Border Agency, prison service and police force. The report explains the net working of criminals with government officials by refereeing an analysis by Britain's Serious Organized Crime Agency (SOCA). The analysis shows that

[9] http://www.transparency.org.uk/ti-uk-programmes/corruption-in-the-uk

organized criminal maintain “corrupt relationship” with official in law enforcement and the criminal justice system.

The report refers a leaked study by the Metropolitan Police which shows that in England and Wales there were 1000 corrupt officers working in the prison system in 2006. The estimates also suggest that there were 600 inappropriate relationships between a prisoner and a prison officer. The report shows that prisoner mainly target prison staff because they are easily accessible and they receive less anti-corruption training

The report notes that 65% of the respondents view political parties as most corrupt sector. The main reason begins this view that most of the political parties receive funding from private donations instead of the state-£59.2 million in comparison to £8.1in 2009-2010. The report says that funding is not necessarily corruption prone, since legally there is no limit on funding, the approach to senior politicians can buy arouses of corruption.

According to the report parliament is the third most corrupt sector. In 2008-2009, expenses scandals have raised the questions on integrity of politicians as many parliamentarian members claimed public money for private purposes. “One of the key concerns over the scandal was the extent to which the legislature tried to minimize the information made available to the public,” the report notes.

According to a survey issued in 2009, 78% of the respondents in Iceland believe that corruption in private sector is rather high (grade 4 or 5 on the scale of 5). A similar trend has been observed in the public opinion of corruption among the members of ruling party where number of respondents who believe corruption has increased from 12% in 2007 to 71% in 2009. In addition, 40% of the Icelanders consider that public officials are corrupt (Capacent-Gallup, 2009).

According to Global Integrity Report (2004)[10] corruption in Germany is spreading like a cancer and it has become part of today’s German reality. The report says that public officials are involved in bribery, managers misdirect money into their own pockets and politicians misuse resources for their personal gains. In 2002, a garbage processing plant in Cologne has

[10] http://globalintegrity.org/reports/2004/2004/country65a8.html?cc=de&act=notebook

been exposed to corrupt activities as it has been reported that an official from the Social Democratic Party had taken at least €174000 in irregular payments allegedly linked to the plant.

Norway is considered among clean economies, however, in recent years, according to Global Integrity Report (2009)[11], corruption is increasing in this country as well. There are two main reasons which describe the recent spike in corruption. First is related to legal strengths in the country, in 2003 a new corruption article has been introduces in Norwegian panel code. The new article gives more authority and flexibility to prosecuting authorities. This article has extended the maximum limit of sentence on corrupt activities (six to ten year) and it also allows to prosecuting authority to punish Norwegians who commit corruption abroad that was not possible in old law. The second reason is that now media has increased its efforts in exposing corrupt activities.

The report reveals some examples of exposed corruption in Norway. An official from tax department received bribe for "fixing" the tax form. In police department, two policeman received money from a prison in reward of arranging an illegal leave. Similarly, a psychologist and a psychiatrist asked for bribes to issue false health certificates to prisoners.

In four different cases, the rehabilitation of public buildings has been exposed to corruption as civil servant, responsible for the rehabilitation received bribes. Usually, these cases involve a civil municipality servant who can influence procurement and tender process in favour of private enterprises in exchange for bribes.

The CEO of two public companies in Norway has misused his position for private gain. He is alleged to transfer more than 100 million Norwegian kroners (US$ 17.7 million) from the two public companies into his private accounts. In 2008, he was sentenced by district court for eight years

According to Global Integrity Report (2009)[12] ccorruption is a major issue in Slovakia. Political corruption is widespread, contracts are awarded to party supporters, tenders are over

[11] http://report.globalintegrity.org/Norway/2009/notebook
[12] http://report.globalintegrity.org/Slovakia/2009/notebook

priced and questionably managed. Slovakians pay bribes of expensive alcohol to professors to secure admission in prestigious universities, to doctors in exchange for special medical treatment.

Experts refer to such a widespread corruption in Slovakia to historical heritage that existed under communist rule (1948-89). The historical corrupt behaviour accustomed Slovaks to manipulate the system for private gains such as a new car, a flat, special medical treatment. The report cites "it was a part of people's everyday life"

Even Prime Minister Robert Fico reveals that he bribed a bottle of cognac to a physician for treatment of his father before the Velvet Revolution in 1989. In 2008, at a press conference, Fico told that it was acceptable to reward political supporters and friends if their proposals remain in legal limits.

In Hungary, aaccording to Global Integrity Report (2008)[13], evidence on corruption ranges from small payments to high profile corrupt activities. Hungarian often participates in small corrupt practices such as a box of chocolate or small money expedites the process of a new ID card. Recently, it was discovered that many Budapest drivers pay lower parking fees to parking controlling companies instead of stiffer official parking prices. Tax evasion is also part of the culture. Overall, corruption contaminates many parts of Hungarian society. It persists in the departments of issuing permits and licenses, in distribution of EU subsides, local government procurement, local government and commercial bribery.

Although, it takes four days by train to reach Moscow from central station of Bishkek in the Kyrgyz Republic but trains are always full on this route. The travel by train is relatively cheap and local business transport goods to Russia. According to Global Integrity Report (2008)[14], Kyrgyz customs officials demand bribes from the passengers irrespective whether they are transporting legal or illegal goods. The custom officials consider the amounts earned from bribes as secondary source of their incomes. The custom officials do not charge fixed tariffs, they get whatever is easily manageable to get form the pockets of the travelers and they share this amount with higher ranking officers.

[13] http://report.globalintegrity.org/Hungary/2008/notebook
[14] http://report.globalintegrity.org/Kyrgyz%20Republic/2008/notebook

Corruption among custom official is rather widespread in Kyrgyz Republic. The officials seek money on imported goods. The imports of the automobiles are among the most profitable goods. For instance an import of Lexus needs 76800 rubles (US$3000) to qualify the clearance process by the officials. The amount earned is split between duty officer and high level custom officials. In 2007, Kyrgyz customs reported US$100 million import from china while Chinese customs reported US$200 million exported. This way custom staff in Kyrgyz is known as the second most corrupt government agency where as the first most corrupt agency is law enforcement.

Financials audits in Kyrgyz Republic are helpful in spotting misdeed. The report refers to the experience of financial managers and accountant of one large government sector who believe that the only way to clear financial reports is to bribe the auditors. It further adds that auditors charge 10% of the underused or mishandled budget to clear the reports.

In 2007, Ministry of Finance in Kyrgyz was declared the worst institution for violation of financial discipline. Financial audits report that 52 of its departments are corrupt and nontransparent. Other than this, government inspections carried out in 2007 report that more than US$566000 of the budget was misspent.

According to a report of Centre for the Study of Democracy (CSD)[15], corruption in Netherlands is more prevalent in public sector than political sphere. In public sector corruption is more common at local levels than central administrative bodies. These are the construction companies which are mainly responsible for local level administrative corruption. These companies pay bribes to local officials in relation to access to public contracts and making the contracts profitable. One other type of local level corruption is related to red-light districts. Individuals linked to organized crimes buy residential places in or near red-light areas and then give bribes to official in municipality for changing the classification of the place from ‘residential’ to ‘brothel’.

[15] http://www.europarl.europa.eu/meetdocs/2009_2014/documents/libe/dv/report_csd_/report_csd_en.pdf

De Graaf et al. (2008) analyze the scale, nature and outcome of corruption cases in the Netherlands. They note that civil servants who are found to be susceptible to corruption are rather high profile officials in the civil service organization. The research shows that both bribe giver and taker know each other well before the violation integrity occurs. Whether corruption exists and matters in Netherlands, the authors argue that those who look for corruption in Netherlands they will find it, although it is not extensive. They point out that every second working day a new corruption investigation begins some where in the government apparatus in the Netherlands. The main conclusion of their study is "that the glass is both 'half full' and 'half empty'."

Costas-Pérez et al. (2011) provide evidence on corruption in Spanish using a data set based upon press reports published over the period 1996-2009. There data show that corruption scandals emerged during 1999-2003 and peaked just before the 2007 elections. This finding is consistent with the argument that corruption in European countries was lower in 1980s but in recent years it is increasing (MacDonald and Majeed, 2011). Costas-Pérez et al. (2011) show that corruption scandals cause adverse effect on election outcome which is consistent with an argument in conventional literature that people in developed countries do not tolerate corruption.

Whether corruption perception determines corruption? Cabelkova and Hanousek (2004) carry out an empirical analysis for Ukraine and show that higher the corruption perception in an organization motivates an individual to offer bribe, thereby increasing corruption. The authors note information about corruption scandals in mass media may lead to high corruption because corruption scandals seldom result in legal action in Ukraine. Their study emphasizes the importance of institutional and government polices to combat corruption. The scandals converge by media can lead to reduction in corruption if legal actions are more probably to happen otherwise media converge will lead to more corruption.

Del Monte and Papagni (2007) examine causes of corruption in Italy over the period 1963-2001. Estimates of their study suggest that economic variables (government expenditures, level of economic development) affect corruption but explanatory power of the economic variables is low. While, political and cultural influences (party concentration, presence of voluntary organisations, absenteeism at national elections) significantly affect corruption. The

authors argue that corruption in Italy has increased due to changes in political and institutional system and corruption has plagued other sectors, such as judiciary, which were free from corruption in the past. Since it is believed that known offender can continue corrupt practices with little risk of punishment corruption goes on and on in Italy.

McCarthy (2003) evaluates corruption incidence for the economy of Ireland and argues that political corruption has increased sharply in recent times. The author emphasizes a review of policy structure to curb corruption particularly in two areas: the zoning of land and the allocation of licences by beauty contests.

2.7 Conclusion

A review of the literature on causes of corruption shows that corruption is a multi-faced and complex problem which has existed over many centuries and there are diverse factors, such as historical, cultural, social, economic, legal and political aspects, explain occurrence of corruption. Many of corruption causes are still inconclusive, many have received least attention, many remains to be discovered and many are not robust. What we understand form the literature on corruption is that corruption is a global challenge and multi-dimension in its nature. First section of this chapter reviews the causes of corruption in general and second part of this chapter reviews corruption incidence in developed European countries. Both sections together imply that corruption is a global challenge and the most important causes of corruption are institutional and legal strengths of a nation.

We can conclude the survey of literature for European countries as follows: (1) corruption is a realty of today's Europe and EU member states and it is a growing threat while European countries lack coherent, coordinated and deep anti-corruption policies, (2) at the time of writing, socioeconomic conditions and the ongoing financial crises, are increasing corruption perceptions and actual corruption, (3) legal strengths are important in fight against corruption, (4) in some countries corruption exists among high level officials which is likely to spill over at lower levels in due course, (5) in some sectors and institutions corruption is endemic, while in some it is absent, however, it is likely to spread in clean sectors and institutions as well eventually, (6) perceptions about lack of punishment or lenient punishment also cause more

corruption, (7) the role and efforts of media are important in exposing corruption scandals, particularly involvement of politician into corrupt activities (8) recent financial crises and their negative effects are putting pressure on existing resources.

Although a number of studies have examined determinants of corruption but most of these determinants are not robust. In a recent study Serra (2006) shows that only five determinants (PCY, democracy, colonial heritage, Protestants and political stability) are robust. Our study not only differs from existing literate by isolating novel and unique sources of corruption but these sources are also robust to a number of robustness checks. In addition, this study provides better understanding of those causes of corruption which are not conclusive in the current literature. Important innovations include considering a wide set of historical, economic, cultural and political determinants of corruption and examining some of the previously considered determinants at a finer level of detail. Thus, this study not only improves our understanding about existing causes of corruption but also provides new insights into the causes of corruption.

3. Corruption and the Military in Politics: Theory and Evidence from around the World

3.1 Introduction

"A rotten apple spoils the barrel." (English proverb);
"If you go with the lame, you will learn to limp." (Italian proverb);
"Whoever sleeps with a blind-man wakes up crossed-eyed." (Turkish Proverb);
"Power tends to corrupt, and absolute power corrupts absolutely." (Lord Acton);
"Corruption is nature's way of restoring our faith in democracy." (Ashleigh Brilliant).

Although, corruption, i.e., 'misuse of public power for private gain' is disliked in its essence because of its detrimental effects on the development of a country, it is pervasive and exists in every country of the world, with varying degrees. Apart from the general negative consequences of corruption, it is considered a major obstacle in reducing inequality, poverty and infant mortality in developing countries.

However, corruption perhaps, like the poor, will always be with us. In many foreign deals, what would normally be regarded as under-the-table payoffs are aboveboard: from the shrewdly sophisticated kickback schemes of the Middle East and Latin America, to the virtual Mafia-style and shakedowns of sub-Saharan Africa and Indonesia, the universal game of bribery in the pursuit of profit goes on and on[16].

It is widely accepted by economists, development practitioners and policy makers that corruption is a real and ever present problem for developing countries. However, recently a number of scandals over corruption have shown that rich nations, traditionally regarded as corruption free. In Norway and Sweden (often seen as the cleanest nations), for example, state owned companies have been found to be involved in bribe taking. Similarly, in Germany, former Chancellor Helmut Kohl and his Christian Democratic party, the CDU, were shown to be involved in malpractices and they were penalized for receiving illegal campaign funding.[17] In fact, recent emerging major corruption scandals have affected a striking variety of countries

[16] http://www.time.com/time/magazine/article/0,9171,922462,00.html#ixzz0acS3mTSS
[17] The CDU received donations from arms industries and it was shown in the process of investigation that the money was indeed a commission paid by the company Thyssen for exporting armored tanks to Saudi Arabia.

all over the world: United States, Japan, Italy, France, Germany, South Korea, Mexico and the Kenya.

In recent years international organizations such as the United Nations, the World Bank, the IMF, and OECD have made corruption a significant focus of their agendas and have made important attempts to curb corruption in the world, particularly developing countries that are more prone to corrupt activities for their weak democracies and institutes. Understanding the significant effects of corruption on a country's development process has motivated researchers to investigate why corruption exists and what determines its high degree of variation across countries. Research on the determinants and effect of corruption has proliferated in recent years (see for example Lambsdorff, 2006 for an excellent review of the relevant literature). Cross-country empirical studies of the causes of corruption have investigated a wide range of factors such as economic, cultural, political and institutional aspects (see for example Serra, 2006). In addition, Ades and Di Tella (1997), Bardhan (1997), Jain (2001), Lambsdorff (2006) and Seldadyo and Haan (2006) provide extensive literature reviews. In the wake of the proliferation of a large number of studies on corruption, a consensus among academicians and policy makers on some of causes of corruption is slowly emerging. However, contentious results still abound as researchers adopt different measures of corruption, different conditioning information sets, or, more importantly, different samples (see, for example, Ades and Di Tella, 1999; Treisman, 2000; Paldam, 2002; Serra, 2006).

Many studies have considered 'political variables' (see, for example, Treisman, 2000; Serra, 2006) and a country's institutional structure (see, for example, Herzfeld and Weiss, 2003; Damania et al., 2004) as important determinants of corruption: specifically, economies with political stability and strong institutions are less prone to corruption. In this paper we explore other avenues that might explain corruption in order to provide a deeper understanding of corruption' incidence and its variation across nations. The motivation behind our search is to provide national governments and international bodies with more scientific and factual information on causes of corruption so that curse of global corruption can be curbed more effectively. This study indentifies the role of military elites in politics as a major factor that fosters corruption. To the best of our knowledge, this is the first study to highlight this important determinant of corruption.

According to recent estimates of the World Bank, every year more than US$ 1 trillion is paid in bribes. The estimates also suggest that countries that control corruption, using anti corruption measures, such as improvement in governance and rule of law, can dramatically increase their per capita income by a staggering 400 percent. The Institute's director for Governance, Daniel Kaufmann, states that the calculated US$1 trillion figure, using 2001-02 economic data, is based on actual bribes that are paid in both developed and poor countries. The figure for bribes is striking in comparison to the actual size of the world economy at that time, which was just over US$30 trillion (this figure does not include stealing of public assets or the embezzlement of public funds). The director states that "It is important to emphasize that this is not simply a developing country problem, fighting corruption is a global challenge."

The embezzlement of public funds is a very serious matter in many settings, however assessing the extent of global embezzlement of public funds is not easy. According to Transparency International estimates, for example, the former Indonesian leader Suharto embezzled somewhere between $15-35 billion from his country, while Abacha in Nigeria, Mobutu in Zaire and Ferdinand Marcos in the Philippines, each may have embezzled public assets of up to $5 billion. It is noteworthy that all of these leaders, except Ferdinand Marcos, have military background meaning that military involvement in politics with the outcome of corruption and kickbacks.

Recent corruption reports and case studies across the globe have shown that military elites in government are no less corrupt then civilian government officials (see for detail, Kieh and Agbese, 2004). Recently, Rumsfled, the former secretary of defense in the US, raises evidence of government, military corruption. The secretary says (admits) that "according to some estimates we cannot track $2.3 trillion in transactions"[18]. This is such a huge amount that if we divide it between all American citizens then the share for each (every) man, woman and child would be $8000. Similarly, the New York Times provides evidence of a vague monetary transaction in the defense department of USA, that is "the defense department spent an estimated $100 million for airline tickets that were not used over a six-year period and failed to seek refunds even though the tickets were reimbursable."[19]

[18] CBS News, 1/29/02, U.S. Secretary of Defense raises evidence of government, military corruption

[19] New York Times, *6/9/04*

This paper adds to the literature on the causes of corruption by addressing the following questions: (1) Does having the military in politics foster corruption across nations? (2) Does the role of military in politics cause have a different effect on corruption depending on the existing level of corruption? (3) What is the role of government in reducing the incidence of corruption? (4) What is the effect of inflation on corruption, and does the effect vary from the most clean to the most corrupt countries?

This study differs in several important aspects to previous work in this area. First we believe that this study is unique as it provides the first analysis of the military in politics, both theoretically and empirically, and therefore should provide a deeper understanding of the causes of corruption. Second, this study not only replicates earlier findings in the literature on corruption but also provides a better explanation of those causes of corruption which are inconclusive and have received least attention using recent data sets. Third, in contrasts to previous studies which generally focus one or two years of data, we use both cross sectional and panel data sets over a long period of time. Fourth this study contributes to the existing literature on the sources of corruption by analyzing the distribution of the dependent variable (corruption). Fifth, existing studies on the topic focus on either panels or cross sectional data bases which do not distinguish between developing and developed countries; in this study we make that distinction clear. Sixth, in this study we use a variety of econometric techniques to account for time dynamics and to control for the problem of endogeneity.

The remainder of the paper is structured as follows. Section 2 provides a review of the relevant literature. Section 3 provides a comprehensive discussion of a theoretical model of military involvement in politics and its links with corruption. Section 4 provides a discussion of the data, while section 5 presents a model and estimation procedure. In section 6 we present our empirical findings. Section 7 is our concluding section.

3.2. Literature Review

This section has been subdivided into four sections. In section 3.1 we provide a comprehensive review of the literature related to military in politics and corruption, which we have gathered using academic articles, analyzing case studies, considering scholarly arguments and speeches from all over the world. In section 3.2 we discuses theoretical model

of the causes of the military engagement in politics, while theories of civil-military relations are explained in section 3.3. Finally, we present a theory of the relationship between military in politics and corruption in section 3.4.

3.2.1 Literature review: military in politics and corruption

Ball (1981) analytically evaluates the political role of third-world militaries for two reasons. First, the military-dominated governments are least responsive to the needs and voices of the poor majority in developing world. In addition, in order to curb civilian demands and unrest, military-dominated governments use arms far more frequently than civilian-dominated governments. Second, as the role of the military in politics grows, so its control over scarce resources of the country increases and a greater amount of these scarce resources is channeled into the military sector or activities closely related to the military.

The author identifies four major societal groups that most likely benefit from the involvement of the military in the economic and political life of a country: domestic civilian groups, the military as an institution, the individuals within the military and foreign groups. Using examples and case evidences, the author outlines the reasons why each of theses groups may favour military intervention into the economic and political life of a country. The author also discusses the ways in which the interests of these four groups coincide. One important reason, among others, for them to favour military intervention in politics, is the maximization of personal wealth through corrupt activities. In other words, corruption is an important element attached to military intervention in the political and the economic life of a country.

When the militaries seek to get involved in the political process of a country, allies are sought among bureaucrats, technocrats and politicians. In military-dominated government the collaboration of the civil service is vital because a country can not be administrated solely with military man power, not even one as entrenched as that in Brazil, Thailand and Indonesia. It is generally argued that the military and the civilian bureaucracy are best allies (Edward Feit, 1973).

Military leaders improve their personal financial condition by frequent involvement in the economic system. To do this, they seek close working relations with local and foreign

businessmen. The military manages a secure business environment while businessmen provide capital and entrepreneurial skills. The engagement of the military in economic corruption is greatest when the military are involved in the political process. In other words, the opportunities for economic corruption for the military are greatest when its role in politics increases. The civilian leaders provide opportunities for senior army officials to increase their personal wealth in reward for their loyalty to the stability of the political regime. Politicians may approach the military for direct intervention in government, to limit the power of political opponents, or the politician may tacitly acquiesce to such involvement. For instance, the occurrence of a series of coups in Sierra Leone in 1967 was motivated by Albert Margai who wanted control of the government (Anton Bebler, 1973).

It is generally argued in the literature on the political role of the military in third-world countries that the armed forces defend the interests of the middle class or, more specifically, the interests of the third world elites. It is true, for example, in the case of Latin America where the elite seek military intervention in order to exclude the mass of the population from political and economic decision making. The elites want such exclusion because they have a fear that increased participation of the poor people in the economic and political system will alter the rules of game, which will not be favourable to the elites. Third world elites not only defend themselves against the dissolution of a political and economic system, which enables them to accumulate personal wealth and power, but they also want to maintain their position within that system (Eboe Hutchful, 1979).

The military as an institution

As an institution the military has many justifications for seeking a political role. Four important reasons are discussed below[20]. First of all, the military wants to maintain an increase in the military's share of national resources. Case studies often note that one reason for a military take over a rise in military expenditures is evidenced, such as a rise in salaries, new military hardware are ordered, and new facilities are provided to the officers and their families. For instance, military expenditures rose by an average of 22% per year in Ghana over the period 1966-69, following a military coup against Nkrumah's government (Anton Bebler,

[20] See for example ball (1981) for more details.

1973). This is in fact a reflection of the fact that prior to the coup Nkrumah had placed the army on an austerity budget.

A second reason for the role of military in politics is simply the maintenance and survival of the armed forces within a country and this is often seen when attempts are made to undermine military hierarchy. For example, in the case of Brazil, President Goulart tried to counter the power of top military officers and consequently was overthrown by the military in April 1964 (Eric A Nordlinger, 1977). The military also gets involved in political power if a politician, who was removed by the military in past, becomes active again. For example, it is one of the key reasons for the coups in Ecuador and Guatemala during 1963 (Martin Needler, 1964; Nordlinger, 1977).

A third reason for military involvement in politics is fear of national disintegration. For example, military officers often argue that their intervention in politics is necessary because civilian governments are inefficient, corrupt and incapable of governing a country and as a result the country is plagued by widespread political, economic and social disorders. In fact, a military intervention or take over becomes easy in the presence of weak, poorly elected civilian-dominated governments. These governments often fail to respond to the voices and needs of a large segment of society. As a result, military-dominated governments are initially welcomed because they promise to curb corruption and to respond to the needs of the poor people. However, in practice military governments do not follow through on these pledges. The evidence shows that the military-dominated governments appear as inefficient and corrupt as their civilian predecessors.

A fourth reason for military involvement is the extension of the concept of ‘national security’ to include internal securities. Militaries not only devise military techniques and doctrine for confronting domestic insurgency but they are also interested in the social and political reasons for insurgency. In countries where civilian-dominated governments are more unrepresentative, the military comes to power in an attempt to institutionalize their role, such as in Indonesia, Chile and Brazil. At present, most developing world militaries are mainly concerned with internal security that implies in future military officers throughout the world will be more interested in politics and government.

Individuals within the military

The enhancement of personal power and wealth is a key factor and a top priority for individuals within the military who seek a political role for the military. It is evident from case studies of military-dominated governments that the maximization of personal power and wealth is indeed a very high priority for a large number of coup leaders. There are a number of ways through which individuals within the military, especially officers, enhance their personal wealth. It is often the case that military expenditures increase because officers want high salaries, better housing, other privileges, such as medical and educational facilities, for their families.

More lucrative opportunities are associated with the involvement of military officers in the political process of the country. “The best opportunities are, of course, in those counties where bribery, rake-offs and other forms of corruption flourish as a matter of course” (Nordlinger, 1977). In Sudan, for example, military officers acquired restricted public land for their own use, undertook public projects for their own benefits and demanded money for the provision of import licenses. Following the first coup in Ghana, for example, the salaries of the military officers rose substantially and foreign exchange was used to buy luxury goods, like Mercedes Benz automobiles, for military officers (Nordlinger, 1977).

In general, personal wealth maximization is easy to achieve in cases where the military take over the government, but this is not a necessary condition, as the enhancement of personal wealth is also facilitated even in civilian-dominated governments where military officers are appointed to top bureaucratic posts, which provide them with ample opportunities for enriching themselves through corruption and kickbacks. These top bureaucratic positions allow them to get involved with private companies and divert government expenditures into investments that are mutually beneficial for military officers and private companies. Similarly, they may also divert economic development assistance to their own uses as well as for bribe seeking by favouring the interests of private companies. Indonesia and Thailand are the best examples of this type of arrangements. Bienen and Morell (1974) conclude for Thailand that: “Widespread participation in and tolerance of corruption play a crucial role in maintaining military cohesion, cutting across factional or personal cleavages to produce common requirements for mutual protection. Factional competitors on governmental issues may sit on

the same corporate boards or participate jointly in the spoils from a participate contract. If no one at the top is 'clean', no one can betray his fellows".

Furthermore, Silcock (1967) for the case of Thailand, "lists 154 government enterprises which are capitalized at $490 million. Of these, forty-nine, are capitalized at $393 million, or 80 percent of the total, and are administered by the prime minister's office and the ministries of defense, interior, and communications, all of which are headed by army generals. Writing of fourteen major enterprises which are owned and managed by the Ministry of Defence, Silcock comments, '…they produce little which is of any military significance, and... bring little return to the government. Their chief function appears to be to provide livelihood and patronage."

Tangri and Mwenda (2003) provide an excellent documentation of corrupt military procurement in Uganda since the late 1990s. They point out that military corruption began to rise when the National Resistance Movement (NRM) government in power began acquiring more and larger military equipment, mainly through third parties. In the late 1990s, many tenders were entered into for aircraft, tanks, guns, food rations and uniforms. These deals invariably created opportunities for bribes and kickbacks which benefited most to the army officers, middle man and top government officials. For instance, in the 1996 the NRM government decided to buy four MI-24 helicopter gunships from Russia. This decision motivated many interests to lobby the government to supply helicopters. Among them a Kampala, Emmanuel Katto, brother in law of the Ugandan Chief of Defense Staff General James Kazini, contacted his overseas partners and successfully lobbied to secure the contract for his overseas partner in a company Consolidated Sales Corporation (CSE). This deal produced a contract without any bidding taking place and the Ugandan government paid $12.2 million dollar to CSE for the helicopter gunships, but in reality these helicopters were purchased from a company in Belarus for only $4.7 million which means that $4.5 million was the cost of corruption. Furthermore, the helicopters were in such bad condition that they remained grounded at Enteblx air force base. So, in reality government lost $12 million on the deal.

Tangri and Mwenda (2003) also document illicit business activities of top military commanders of the Ugandan army engaged in military operation in the Democratic Republic of Congo (DRC). In August 1998, Ugandan soldiers were deployed to curb the rebels

threatening the security of Uganda and destabilizing the stability of NRM government. Nevertheless, the Ugandan Peoples Defense Force (UPDF) crossed the border security and entered into the areas of Eastern Congo to plunder the natural resources.

In fact, Congo became a veritable treasure trove for top military commanders who became wealthy from stealing and resource plunder, together with their civilian partners. Specifically, officers have been engaged in smuggling resources - gold, diamonds, timber and coffee - from the DRC to Uganda. The in charge of operation, major-general Salim Saleh has been alleged of rewarding his own company a $400,000 monthly tender to supply UDPF with commodities in Gulu. Salim Saleh was also involved with Trinity Investment Limited (TIL). This company was alleged for not paying import duties to ruler while importing into DRC and for not paying taxes while exporting gold, timber and coffee into Uganda.

Tangri and Mwenda (2003) note weak and limited accountability on matters of military and civil servant corruption. They write “and not a single army officer, senior civil servant or top government minister has found prosecution or punishment for their alleged misdeeds”. The authors also note that military intervention in government affairs is high because there were mutual interests like president Museveni wanted to keep his power and kept strong ties with top military officials to ensure their loyalty.

Money generated through corrupt procurement was awarded to top military officials for their loyalty and spent on NRM’s political patronage system to ensure stability and strong power of the government. In fact, top military officers-Salim Saleh and James Kazinin-have been identified as being massively involved in many of the corruption deals. The military officers benefited from corrupt deals and substantial funds have been reserved for president’s political projects. This is why when president Museveni’s presidency was challenged in 2001, many commanders supported Museveni and campaigned against the presidency challengers. Many senior army officers were “particularly sensitive to any threats to prosecute or follow them up for any commissions or omission under Museveno” (Aliro, 2002). Wakabi, (2000) also notes that the above discussed military corruption is closely associated with Ugandan politics. For example, president Museneri was involved in military corruption and support of corrupt elements. The president refuted “claim of corrupt business dealing and embezzlement by his top military commanders”.

Amuwo (1986) documents the role of military in politics and corruption for the state of Niger. The author notes that military involvement in politics is based on good factors-rigor, accountability, order, probity, discipline, etcetera- but actually these vaunted factors are of limited utility once military officers get in involved in the political process and governance. In fact, they are also involved in the internal dynamics of the civil society due to financial and economic advantages. The author says that military growing class badly spoils its own hands instead of implementing anti-corruption measures.

Recently, the Niger state governor, Bakongida Aliyu, blamed corrupt practices in the Niger to the involvement of military in the politics. He said the military rule has eroded service delivery in all sectors of the national economy. The governor argued that the incursion of the military into politics bred corruption because the military rule makes it difficult for people to resist poor service dealing. He said "the military instituted corruption and the old men who were supposed to talk were contented with little gifts'. He further said 'during the military regime, we had people who could not make one N1 million in 10 years making it in one day".[21]

Ghosal (2009) evaluates the recent military intervention in the politics of Bangladesh. The main hypothesis of this study is that military involvement in politics is changing its pattern in countries like Pakistan and Bangladesh. The study labels this new pattern 'power with out responsibility' which would seem to bode ill for domestic development in both countries. Ghosal argues that in Bangladesh, as in Pakistan, the army does not necessarily directly come to power but controls the establishment in the background and destabilizes politicians. If this type of military intervention benefits the country then the military takes the credit, but if it does not benefit the country the blame is passed to the establishment. Ghosal concludes that "a new model of military intervention in politics—rule without responsibility and accountability—has emerged in Pakistan and Bangladesh, which obviously has both long- and short-term implications for political developments in third world countries and, thus, requires closer scrutiny and analysis".

[21] (Source:http://thenationonlineng.net/web2/articles/24167/1/Military-institutionalised-corruption-says-Aliyu/Page1.html)

Moudud Ahamn, criticizes military involvement in government and blame massive corruption in Bangladesh to military's involvement in government. Specifically, he criticizes the military take over of Bangladesh in 2001. He gives the reference of International Transparency (2008) which shows that corruption has increased since the military take over in January 2007. He argues that the problem with military intervention is that people are deprived of the choice "to have any voice or control at all over those aspects of their destiny and daily life which interfere with the state". He says that "a military dictator decides on his own. He becomes, in effect, an unelected King answerable to no one". He further argues that Bangladesh is facing state plundering by military rulers just like Pakistan and Indonesia. The people of Bangladesh are being deprived of their liberty and the military intervention is causing economic and social disorder.[22]

Bhakti et al. (2009) document the history of the military in Indonesia, its role in politics and its role in perpetrating violence. The role of the military in politics had been defined during the Sukarno (1945-1965) and Suharto eras (1966-1998). However, following military reform era (beginning mid-1998), the role of the military has been reduced. Despite various stages of military reform, the military involvement in politics in different forms still exists. The authors argue that given the historical dual role of the military, the military "has been able to set agendas and perpetrate violence without civilian oversight". For instance, this has led to different acts of violence in Papua, perpetrated by the police and military.

The case evidence, at least from Thailand and Indonesia, suggests that corrupt patron-client networks are mainly controlled by political elites in the government, the military, and the bureaucracy (Rock, 2000; Rock and Bonnett, 2004). Rock (2000) argues, with reference to Thailand's bureaucratic polity, that a centralized patron-client corruption network between political elites, senior bureaucrats and top military officers developed in the presence of the military in politics and in the absence of a democratic process. "In this centralized patron-client network, senior government officials provided protectionist rents to a small number of Sino-Thai entrepreneurs in exchange for kickbacks. As in Indonesia, the government protected private property and extracted rents at a low enough tax rate to entice entrepreneurs to invest, which they did".

[22] http://moududahmed.com/3.html

In the case of Indonesia, Mcleod (2005) argues that the president managed a franchise system during Soeharto's New Order government. This franchise system provided strong incentives for public officials to pursue growth oriented policies and enrich themselves through corrupt activities. "In this model, rents were collected by simple extortion and by public sector policies that enabled the regime's cronies to amass protectionist rents. Government officials – in political parties, the judiciary, the bureaucracy, the military – and Soeharto's family participated in this franchise system through kickbacks, awards of government contracts, and through the granting of monopolies to cronies. Soeharto's franchise system protected both private property and taxed economic activities at a low enough rate to encourage private sector actors to invest in productive activity".

Tangri and Mwenda (2008) conduct a case study on Uganda and point out that Uganda state elites - government officials, bureaucrats, army - have maximized personal wealth by seeking kickbacks and corruption. Apart from corrupt activities, other motives have been political consolidation for the elites. They note that top political administrators and military officials were allowed to exploit their positions for personal gain and they were also obliged to use their funds to support the stability of the political regime. In fact, resources from high levels of corruption have been used for both political mobilization and personal wealth maximization. "They argue that state elites – cabinet ministers, senior civil servants, and army officers – have abused their positions for personal gain".

Kieh and Agbese (2004) argue that in the African experience of the military and politics is one in which the main motivation in nearly every military coup is an anti corruption stance. However, in practice, once they are in office, the military do not show a lesser tendency towards corruption compared to civilian politicians. In reality, facts and figures about systematic plundering of the public treasury in Ghana, Nigeria, Zaire, and many other countries show that military elites are even more corrupt than civilian politicians. For example, Gen. Mobutu Sese Seko of Zaire and Gen. Sani Abacha of Nigeria have been alleged to have been involved in corrupt enrichment through the transfer of the state's budget into the private coffers of the head of state.

McNulty (1999) contends that Mobutu's fortune estimated at "between $6 billion and $10 billion in 1997…was accrued at the expense of his country's economy and natural resources,

through creation of the quintessential vampire state" William Reno (1998) has shown how Mobutu systemically privatized the public coffer by allocating the bulk of government revenues to the presidency. Ude (1999) provides an analysis of the scope of corruption under the Abacha regime, in which Abacha and his family members looted huge sums of money from state coffers. Following the sudden death of Abacha in June 1998, his family left the official residence in haste and many of their belongings were not removed. The items left behind were 52 luxury cars and a stock of local and foreign currency in huge industrial crates, among other items. Abacha's successor, appropriated the embezzled money from the family and, under intensive pressure, made the family return over 220 billion Naira to the government.

In addition, Kieh and Agbese (2004) note that in cases where military officers are not massively engaged in looting of the state treasury, they tend to increase substantially defense budget and this bodes ill for the country's economic welfare. In virtually every African country during a military regime, expenditures on defense and security massively increase while expenditures on education, health and social services decline. For example, following a military coup in Liberia, defense and security expenditures increased dramatically from $17.8 million to $44.6 million over the period 1978-81 (Elwood Dunn and Byron Tarr, 1988).

Obasanjo (1999) also contends for Nigeria that military involvement in politics fosters corruption. He asserts that "no matter how noble the intentions of the pioneer coup-makers may have been, the prolonged involvement of the military in the administration and management of the state had aggravated the problems of political instability and deepened corruption within our society". Soldiers in Ethiopia came to power promising to bring justice, administrative efficiency and a corruption free society but Apter and Rosberg (1994) note that military rulers control over politics and the economy in fact increased corruption and ruined the economy.

Dr. Ayesha Siddiqa-Agha[23], in an online interview conducted by despardes.com's Editor-in-Chief Irshad Salim, reveals that military generals in Pakistan are worth Rs 500 million (US $9.8 million) each. She explains the way in which the military establishment of Pakistan has

[23] She is an ex civil servant a scholar of Pakistan's military and security affairs and a regular contributor to several Pakistani and internationally renowned opinion journals.

systemically looted the country and points out that the military generals are no more than thieves.

In Siddiqa-Agha (2007) it is revealed that the military is entrenched in the corporate sector of the country and Pakistan's companies are in the hands of senior army officials. The private business empire of Pakistan's military is worth approximately £10 billion. Both in-service and retired army officials control secretive industrial conglomerates, which manufacture everything from cement to cornflakes and the military also owns 12m acres of public land. Her findings suggest that the Pakistan army, through predatory engagement in the political and economic process, has amassed great wealth. She also points out that the military elites foster economic corruption in partnership with other civilian elites, such as the civil bureaucracy and entrepreneurial class. It is worth noting that Siddiqa-Agha's book has been banned in Pakistan.

Recently, Thailand's military-backed government has been alleged to have been involved in corruption cases involving illegal campaign donations. In April and May 2010, Red Shirt protestors in Thailand created chaos and may cause a collapse of the military-backed government for its corrupt activities and uneasy political paradigm.[24]

3.2.2 Theoretical models of causes of military engagement in politics

In this section we present theoretical models of the causes of military engagement in politics. The literature provides many theoretical models as explanatory framework for military involvement in politics. These theoretical models can be classified as follows: the personalist, corporatist, manifest destiny, Marxist and integrative theoretical models. We now briefly discuss each of these models.

The personalist model

According to this model the military intervene in the political arena of a country for three reasons. First, the military rulers seek intervention in politics for personal power enhancement. Second, poor socioeconomic conditions of the country are justified for staging a coup, but the essential motive behind such coups is the personal agenda of military rulers for raw power and

[24] http://www.asiasentinel.com/index.php?option=com_content&task=view&id=2599&Itemid=387

self-aggrandizement. Third, usually, it is the military leader himself who is the principal agent for the execution of the coup plot, with the support of his likeminded fellows and assistants.

The corporatist model

According to this model the military is a corporate entity meaning that individuals within the army have certain collective tendencies 'that make them develop a singleness of purpose' (Welch, 1987). Basically, the armed forces consider themselves a separate corporate body and all civilian groups as another corporate body. The armed forces consider themselves remarkably different from civilians. Certainly, such a perception on the part of the military represents 'the conduct of civil-military relation as a zero sum game'.

A further element of the model is that the armed forces share a collective interest, such as the maintenance of high military budget, the protection of military status, the protection of military rules, procedures, and norms and so on. The military intervention in politics is inevitable if civilian regimes attempt to undermine the collective interests of the army.

The manifest destiny model

The term manifest destiny model was coined by Finer (1988). This model is based on the concept that military officials are arrogant and they consider themselves superior to civilians and consider they are the only saviour of the interests of the nation.

According to this model the military justifies its intervention on the bases that civilian regimes suffering from mal-administration and chaos and it is the military that can effectively protect and defend the national interest.

Marxist model

The Marxist model is based on following main arguments. First, the model links the military in politics with the issues embodied in the general crises of underdevelopment and predatory effects of the capitalist system. It treats the problem of military in politics as part of crises of underdevelopment while the crises of underdevelopment have their genesis in globalisation of the capitalist system and the imposition of colonialism. Second, the capitalist system has created two general classes, the propertied and the non-propertied. According to the model state officials tend to protect and promote narrow particularistic interests of the propertied class. Third, the inequality of resource distribution causes class confliction, resentment, and struggles. These struggles are likely to destabilize incumbent civilian regimes. Fourth, in such

a state of affairs, the military find an opportunity to step in political sphere of the nation. However, historically, the military protects interests of the few elites (ruling class).

The integrative model

This model is based on the idea that military intervention is not motivated by a single factor but by a confluence (host) of factors. These factors can be categorized as personal, corporatist, the messianic complex, social, political and economic. The economic, political and social problems under civilian regimes, in combination of other motives of the armed soldiers, are usually justified for the military coups or engagement in politics.

3.2.3 Theories of civil-military relations

The literature provides three major theoretical models of civil-military relations: the Classic (or Western), Communist (or subjective control) and the Praetorian models (for further details see: Welch, 1976; Herspring and Volges, 1978; Adekson, 1981; Kolkowicz and Korbonsk, 1982; Crouch and Haji, 1985; Kieh and Agbese, 2004).

The classic model

The classic model of civil-military relation is supposed to prevail in the developed market economies. The essential proposition of the model is submission and subordination of the military to civilian control and supremacy. According to the western model, the military neither participates in politics nor questions the political supremacy of elected politicians. In fact, elected politicians and the military have a clear and unambiguous separation of power where the military respects supremacy of the politicians. In this context, Kemp and Hurdlin (1994) claim that it is a moral obligation of soldiers to respect civilian control. In the same way, Finer (1975) emphasizes that the respect for civilian supremacy by the military in fact holds back political intervention. Under the classic model, the role and responsibilities of the military are set up by civilian authorities and the military cannot surpass the parameters of the rule and responsibilities established by the civilian authorities. In these societies citizens have a right to evaluate national security policies. A major advantage of the civilian control is that it promotes professionalism within the armed forces. As Huntington (1957) notes that essential objective of civilian control and supremacy over the military is maximization of autonomous military professionalism.

The communist model

The communist model of civil-military relations does not assume political independence of the military. According to this model the military engages in politics through the ruling political party and follow the ideology of the party. The purpose of participation is to guard and maintain the hegemony (supremacy) of the ruling political party over state and society. As Perlmutter (1982) notes, other than guarding the heroic party the military 'identifies its value with that of the party'. In brief, under this model, the military is not free from politics and its political role depends on the ruling political party.

The praetorian model

In the praetorian model, civil-military relations are not stable as in the classic model and the military elites are among the top contenders (candidates) for political power. This model prevails in those countries where political institutions are weak and fragile, in combination with the issues and crises of underdevelopment, Politicians lake the ability to hold civilian supremacy over armed forces. Huntington (1968) contends that "in a praetorian system there is the absence of effective political institutions capable of mediating, refining and moderating group political actions. Social forces confront each other nakedly: no political institutions, no corps of professional political leaders are recognized and accepted as legitimate intermediaries to moderate group conflicts. Each group employs means which, reflect its peculiar nature and capabilities to decide upon office and policy…. The techniques of military intervention are simply more dramatic and effective than the others".

3.3 Theory: military in politics and corruption

This study asks whether the involvement of the military in politics fosters corruption. Although historical facts, case evidence, recent emerging corruption scandals all over the world, as well as scholarly argument suggest a relationship between the military, politics and government surprisingly, no one to our knowledge has systematically developed theoretical links of the relationship and, equally, no one has tested this relationship.

The available evidence on the relationship between the military in politics and corruption is largely based on country level descriptive studies and focuses on information culled from

scandals, allegations, speeches and reports. Although such studies do indeed suggest there is a relationship, they do not provide any firm econometric or statistical analyses. This is the novelty of our study in that we compile evidence on the relationship between the military in politics and corruption from around the world and analyze it using econometric methods for a large set of countries over a long period of time.

The purpose of this section is to develop a systematic and logical theory (the links or channels) of the relationship between military in politics and corruption. It is important to mention that the involvement of military in politics is caused by a host of factors and generates a range of consequences. In this study, however, we just focus on a particular aspect of the consequences, namely corruption, and leave the analysis of other consequences such as the impact on inequalities and poverty for future research.

Why and how does having the military in government foster corruption? In order to answer these important questions, we will develop theoretical channels/links that consider the importance of the military budget, power and wealth, collusion amongst the elite in a country, control of top administrative positions, natural resources and foreign groups in shaping the link.

Military spending

The role of military spending is critical in shaping the relationship between the military, government and corruption because it is *the* factor that motivates top military officials to intervene in government for maintenances or increase of the share of military in national resources. Most often, military coups occur when democratic governments attempt to keep the military on an austerity budget. Once military commanders hold positions in part of the government machinery, or in extreme cases when democratic governments are replaced by a military regime, then increase in military spending is inevitable. Of course the opportunity cost of the rising military spending is seen in reduced public spending elsewhere in the economy, such as education, health and welfare subsidies, among others and this has knock on consequences for human capital formation (in terms of lower finance available for education and health), among others, and weakens the strength of anti-corruption measures.

Secondly, when militaries have a greater share in the national resources of a country then procurement of military hardware and arm trades are the inevitable out comes. Both historical evidence and current patterns show that the military procurement is highly susceptible to corruption because of limited scrutiny, audit and massive over payments. Another reason for corruption in the case of military procurement is the lack of competition. For example, Wilson et al. (2006) provide evidence that governments tender out 50 percent or more of their defense procurement requirements to a single supplier. Similarly, according to a survey by Control Risks (2006), one third of international defense companies realized that they had lost out on a contract in the last year because of corruption by a competitor.

Military operations other than war (MOOTW) principles are an extension of war fighting doctrine. Embodied in these principles is the dominance of political objectives at all levels of MOOTW[25]. In the literature on military operations there is distinction between war and other operations. For example, Story and Gottlieb (1995) provide a military operational frame work in which they divide military operations into combat, noncombat and simultaneous operations. The combat operations include war, operations to restore order and retaliatory actions while noncombat operations include show of force, truce-keeping, support and assistance operations. Some military operations could involve combat and non combat at the same time and these operations are considered as simultaneous operations. The simultaneous operations are combating terrorism, exclusion zone operations, ensuring freedom of navigation, non combatant evacuation operations and recovery operations.

In the presence of the military operations (either combat or non combat operations) one direct effect is a rise in the military budget. The military officials find further discretion (flexibility) over manipulation of the military budget for private gains. For example, according to Transparency International (2007) defense institutions (ministries and armed forces) are "profiteering from soldiers' payroll (e. g. extracting percentages from total cash; ghost soldiers; adding cronies on secret pay rolls)". A range of the military operations increase military control over security posts. According to Transparency International (2007) defense officials extract money to pass security and other check points.

[25] http://smallwarsjournal.com/documents/jp3-07.pdf

The military operations could be corruption prone because monitoring of field commanders is not strong as the evidence suggest from African countries. Specifically, when troops are deployed in a large and complex terrain then checks on fields' commanders are limited.

Fourthly, military leaders often manipulate tenders for personal gain. The tenders for even routine items like uniforms and food are often severely manipulated and usually awarded to companies which are non competitive in order to create payoffs for military officials. Finally, top military officials manipulate the military budget for personal and family reasons, such as salaries, medical support, education, foreign visits and so on. Having discussed these arguments, we can say that an unjustified rise in military spending with out tight monitoring and accountability leaves the margin for kickbacks and corrupt activities.

Personal power-wealth maximization and regime stability

In this case, civilian governments seek military engagement to mobilize the military support for regime stability. The civilian leaders provide opportunities for senior army officials to increase their wealth as a reward for their loyalty in ensuring the stability of the political regime and, in turn, the military officials also spend part of their time accumulating wealth (through corruption and kickbacks) for political patronage and to ensure the stability and strong power of the government. Both top officials in the military and civilian leaders want to maximize their vested interests, where political leaders want regime stability and the military want personal gains without sacrificing their status within the military hierarchy. The joint motive of power-wealth maximization and regime stability is best served through pay-offs.

Top bureaucratic and administrative positions

According to the manifest destiny theoretical model (Finer, 1988), military commanders are arrogant and consider themselves superior to the civilian rulers and seek to hold top bureaucratic and administrative posts. However, they lack a professional approach and attempt to control things with power and by satisfying the interests of few and it is often the case that they exploit their power in administrative and bureaucratic posts for private gain. In doing so, they award government contracts to private companies in reward for money.

Elites' collusion

Military elites have a tendency to collude with political, administrative and bureaucratic elites in society. The basic motive behind collusion of all of these elites is the exclusion of the mass of the population from economic and political decision making processes. The elite want such exclusivity because they fear that increased participation of the poor people in economic and political system will alter the rules of the game which will not be favourable for the elite. The elites not only defend against the dissolution of the political and economic system, which enables them to accumulate personal wealth and power, but they also want to maintain their positions within that system.

The elites also control corrupt patron-client networks. The centralized corrupt patron-client networks usually evolve with the involvement of the military into politics and are likely to vanish in the presence of democratic process. The basic purpose of centralized patron-client networks by the elites is to provide protection rents to entrepreneurs in exchange for kickbacks. The elite collusion rewards few at the cost of the mass of the population, thereby generating important income inequalities in economies where these factors exist.

Kickbacks and corruption are the key elements, among others, that keep the elites united and protect mutual interests. Exclusion of the mass of the population from economic and political decision making inhibit (limit) their abilities to monitor corruption or, most importantly, even if it is generally known that corruption deals take place, the public can not force or devise punishment because their voice is low and usually curbed.

The institutions like judiciary, law and order all are weekend in the presence of strong ties of the elites and the system cannot itself make break the unison of the elites. In order to protect their mutual interests, and in view of a possible conflict amongst the elite, they develop family ties through institutions such as marriage, to reinforce their interests.

Dissolution of the elites is unlikely because if any one class of elites disagrees with others and isolates itself from the group, then the cost of isolation is much higher than the gain. The major cost of isolation is possible legal prosecution (action) against past misdeeds. This is analogous to the prisoner’s dilemma where benefits are maximized if no one betrays the others.

Because armed soldiers have the power to rebel against the state or create a coup, their independence from politics serves as an ever present threat to the body politic if they are tempted to become corrupt. Conversely, if the military itself departs from its professionalism and joins the civilian elite then there is no further threat to corruption unless some form of mass revolt from the general public occurs, which is indeed a rare case. In other words, civil-military collusion to safeguard mutual interests, particularly corrupt activities, does not face accountability and monitoring challenges.

Natural resources and rent seeking

There is a vast body of literature that provides theoretical models and empirical evidence on the relationship between natural resources and rent seeking activities. Many studies find that natural resources generate rent seeking activities (see for example Leite and Weidmann, 2002). In a very recent study, Bhattacharyya and Holder (2010) predict in their game-theoretic model that (only) economies where the quality of democratic institutions is poor, natural resources cause corruption. They also provide empirical support for their theoretical prediction by testing the proposition for 124 economies over the period 1980-2004.

We apply and extend the theory of natural resources, rent seeking and corruption to the relationship between military, government and corruption. In the context of classic models of the role of military (Huntington, 1957; Kemp and Hurdlin, 1994), soldiers cannot manipulate economic resources for private gain; however, in the case of so-called praetorian models (Huntington, 1968) they have control over economic and natural resources. The basic point is that the military have control over natural resources once they get involved in the political and economic sphere of a country and, additionally checks and balances on military official are limited. In this context they will plunder natural resources for themselves, and divert natural resources to the military and associated sectors. On the other hand, for countries which are resource abundant but have strong democratic institutions, the classic models of military's role in politics suggest that their rent seeking activities are checked by the accountability of democratic governments to their the people.

During military regimes, or military backed government, the distribution of public lands is often skewed towards armed forces and commercial housing schemes come under the control of top military officials and the control of such housing schemes also generate kickbacks and

corruption opportunities for the military commanders. Similarly, exploration of natural recourses is highly risky and requires a huge investment and the multinational companies that invest in the exploration of natural resources normally receive a commission for their exploration.

Foreign elites (groups)

Foreign governments, specifically from developed countries, may support military engagement in politics, as a means of advancing their own political-strategic and economic interests. It is relatively easy to manipulate the policies of developing countries through military backed governments, rather than through civilian governments. This is a vast topic and there are a number of issues that are important in shaping the role of foreign groups; however, we shall focus on the link of foreign elites in the presence of military in governments and its effect on increasing corruption.

Foreign businessmen (elites) look for countries where a secure business environment is available especially if it is available in a military regime or military-dominated government. The military provides a safe and secure environment. This is not on a voluntary basis, but military officials look for their private gains and wealth enhancement via kickbacks and corruption. Furthermore, militaries can easily manipulate national polices because they are not accountable to the general public and policies may be manipulated to favour the interest of foreign elites in reward for money.

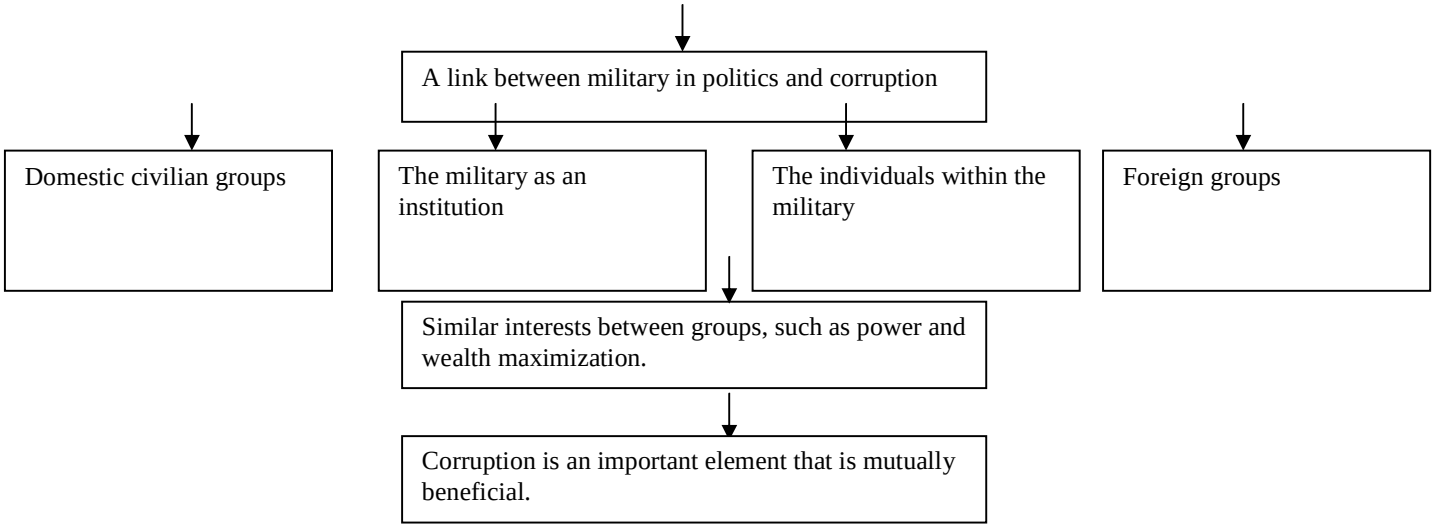
Military governments spend a lot of money on infrastructure projects such as roads, bridges and so on and their spending generally satisfies the requirements of foreign elites plus tenders of the projects to generate kickbacks opportunities. Similarly, arm trades also flourish during the regimes of military-backed governments and these trades require massive spending of money and are subject to limited scrutiny and accountability.

The MNCs flourish in military dominated governments, and these firms consider bribes as just as a cost of production and transfer this amount in the price of their goods and enjoy many privileges under military regimes. The military dominated governments also privatize public entities on non competitive bases to foreign stake holders and enrich themselves with the commission. For example, according to Transparency International (2007) defense institutions

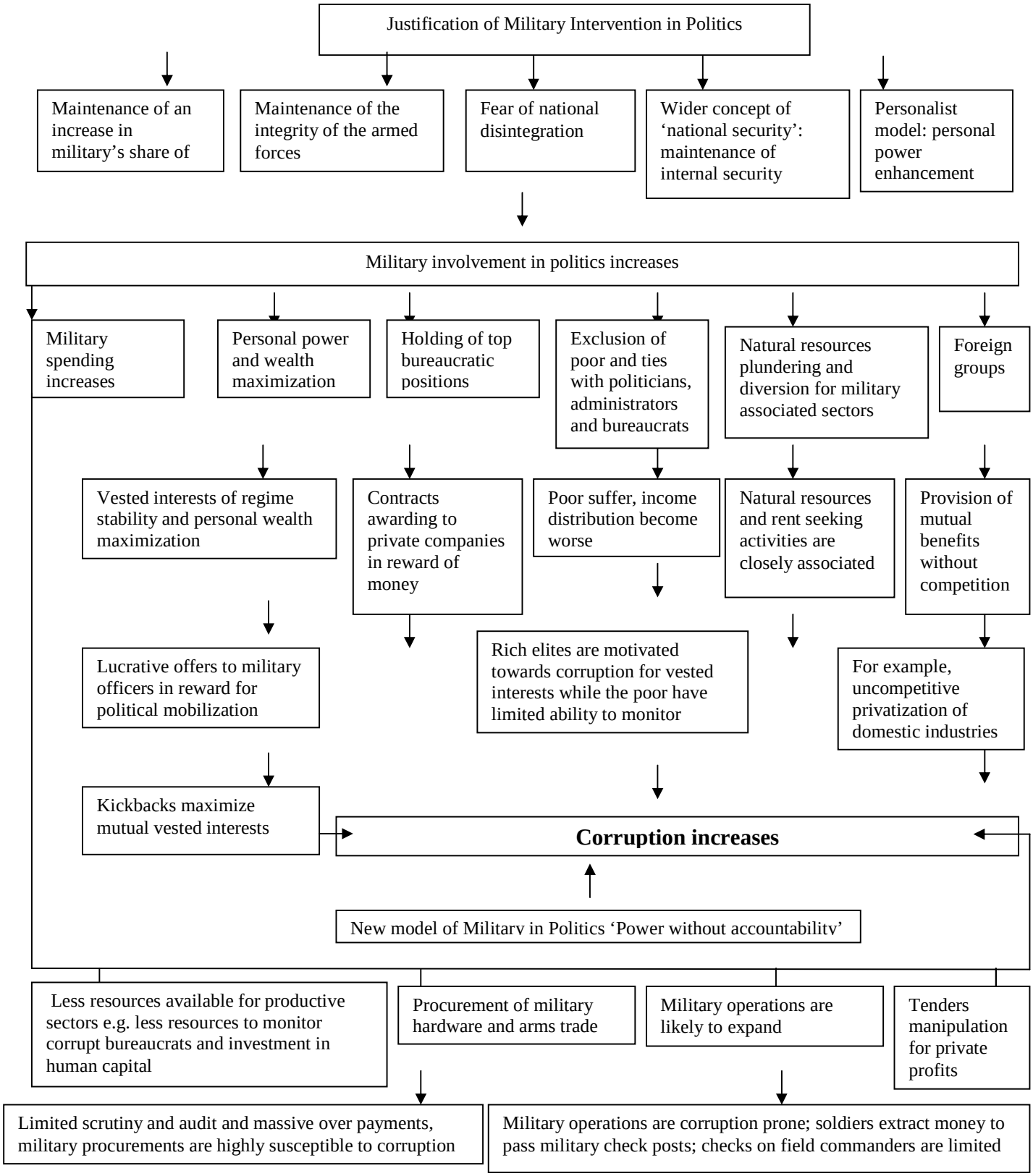
(ministries and armed forces) are “profiteering from income from state-owned assets (e.g. below-price sales of property portfolios; selling of surplus equipment; below price privatizations)”.

In general, military officers enrich themselves by receiving pay-offs in return for facilitating the interests of particular companies. “An open-door policy to foreign capital may also facilitate the acquisition of substantial support from multilateral and bilateral agencies. Well-placed military officers will be able to divert some of these funds to their own uses” (Ball, 1981). Finally, we develop two flow charts to provide a summary of the links between the military in politics and corruption. Following the above discussion, we isolate those links of the military and corruption that are relatively more conducive to explaining the relationship between the military in politics and corruption. The first chart shows that corruption is beneficial between groups in the presence of the military in politics while second chart provides a quick snapshot of the positive relationship between the military in politics and corruption.

Who benefits from the military involvement into the political and economic life of a country?



Channels of Military in Politics and Corruption



3.4. Data Description

The ICRG (International Country Risk Guide) corruption index and corruption perception index (CPI) by Transparency International index both are used in corruption studies. We prefer ICRG because most previous studies use it and the index covers a large number of countries and a long period of time. The comprehensive nature of the ICRG index gives it an edge over other available indices. The ICRG also has a high correlation with other indices that have been used in the literature, such as the Transparency International and Business International (see Treisman, 2000 for more details) indices. We also carry out a simple correlation matrix for three alterative corruption indices over the period 1996-2007. The correlation matrix indicates that the correlation between the International Country Risk Guide (ICRG) corruption index and the Transparency International (TI) corruption Index is 0.87 while the correlation between ICRG and World Bank (WB) corruption Index is 0.88. The correlation between TI and WB is 0.98 and it implies that these indices are consistent, even although they are based on a subjective rating.

The other variables used in this study are reported in Table 3-1. We average the data over a 5-year non-overlapping period, 1984-2007. In this way we have five observations, in most instances, for all of the countries in our sample. The 5 year average periods are: 1984-88, 1989-93, 1994-98, 1999-03, 2004-07. In Table 3-2 we present some descriptive statistics of the data and Figure 1 shows the relationship between the military in politics and corruption for cross sectional and panel observations. In the first row of the figure the last two scatter plots contain panel observation while all other scatter plots contain cross-sectional observations. This scatter plotting of the data confirms a positive relationship between the military in politics and corruption. There are outliers at a low level of military in politics while at higher levels military in politics outliers are absent (we address this issue in separate estimates for outliers and find a robust and positive relationship). Figure 2 simply also includes developing countries and this demonstrates a positive relationship as well.

Figure 3 demonstrates the relationship between the military in politics and corruption over the period 1996-2007 for a large cross section of countries. This figure has been constructed to view the relationship between the military in politics and corruption using three alternative corruption indices that are extracted from the International Country Risk Guide, Transparency International and World Bank, respectively. It is evident from all sub parts of the figure that

the relationship between the military in politics and corruption is positive irrespective of which corruption index is being used.

Figure 4 shows a comparison of the military in politics and corruption across regions over the period 1984-2007. Two things are evident from this figure. First, both variables are positively associated. Second, in the case of Sub-Saharan Africa (SSA), East Asia & Pacific (EAP), Lat America & Caribbean (LAC), Middle East & North Africa (MNA) and South Asia (SA) this relationship is strongest. However, in the case of Europe & Central Asia (ECA) and Europe (EU) this relationship is not as strong and is weakened by the presence of outliers (it is also clear in the subsequent regional figures).

Figure 5 contains a comparison of the military in politics and corruption across countries and within a region of East Asia & Pacific (EAP) and demonstrates a strong positive relationship. Figure 6 replicates the above comparison for Europe & Central Asia (ECA) and shows that the relationship between the military in politics and corruption is positive. However, in this region some outliers exist and these are Kazakhstan, Ukraine and Turkey. Figure 7 replicates the same comparison for Latin America & Caribbean (LAC) and depicts a positive relationship as well.

Overall we conclude that the relationship between the military in politics and corruption is strongly positive across the countries, regions and within the region. This relationship also holds in sub samples, alternative corruption indices and different time periods. Although there are a few outliers, these outliers are too few to weaken the main results.

Finally, in this section, we provide a discussion how the ICRG indices for rule of law and the military in politics are derived. The variable rule of law has been derived from two sub-components namely ‘law’ and ‘order’. The variable law is based on the performance of following factors: “the strength and impartiality of the legal system, the extent of the case precedent, and the consistency of legal and legislation and practice” (ICRG, 2008). The variable order is based on the assessment of popular observance of the law. This reflects partially a compliance of the population to be self-regulating “but also has to do with the numbers of police who enforce the law, the training of police forces and judicial employees (lawyers, judges, court clerical and technical staff), and the willingness of these forces to

engage in enactment of the laws of the country" (ICRG, 2008). This is possible that a country might have a high rating for law in terms of its judicial system but a low rating for order in terms of its political deficiencies meaning that law is compromised for a political objective. For example, pervasive strikes entailing illegitimate practices or inadequate number of lawyers to prosecute and defend accused criminals (ICRG, 2008).

The variable military in politics has been described in the International Country Risk Guide (2008) as follows: The military is not elected by anyone and for that reason, its intervention in the political process of a country, even at a peripheral level, is harmful for the democratic process and accountability. Some of its other important implications are as follows: the military may be involved in government on account of an actual or created internal or external threat to national sovereignty. This situation implies the distortion of government policy because certain policy options need to be required and implemented to meet this threat; for instance, a reallocation of budget in favour of the military at the cost of other important budget allocations. The threat of a military take over can force an elected government to change its policy in line with the desires of the military or may even replace it by another government more acquiescent to the wishes of the military. If a military take over, or a threat of take over, indicates inability of the present government to function effectively then the economy will pose high risks for foreign businesses and a full-scale military regime poses the greatest risk. Although a military regime may temporarily provide stability and therefore reduce risks for businesses in the short term, in the longer term risk will almost certainly rise for two major reasons: the system of governance will be become corrupt and, second, the continuation of such a government may create an armed opposition.

3.5. The Model and Estimation Technique

In this section we specify the estimating equation we use to capture the military – corruption links. The equation is based on the theoretical and empirical literatures on the causes of corruption.

3.5.1 The model

In order to specify a corruption model, we follow the existing theoretical and empirical literatures on this topic. The recent growing literature on the sources of corruption builds on two bench mark studies by Treisman (2000) and La Porta et al. (1999). In developing a corruption model, the first step entails specifying the important control variables. The key control variable used in extant corruption models is economic development, generally measured by per capita income (PCY). There is consensus in the literature that nations at the top of the economic development ladder have a tendency to be the most clean (least corrupt), whilst nations at the bottom of ladder of economic development tend to be most corrupt. This suggests that the expected sign for PCY is negative. In the third step, the studies introduce few selective control variables that capture institutional, political and cultural dimensions of the corruption. We then introduce a set of other control variables which have now become standard, such as those that capture institutional, political and cultural dimensions of the corruption. The third step in our strategy is the introduce what we regard as a new source of corruption, that has not so far been quantified in corruptions studies, namely the role of military in politics. In particular we ask whether the involvement of the military in the political life of a country fosters corruption. In doing so, we collect case evidence from all over the world and provide a systematic documentation of the evidence of the military in politics and corruption. Having compiled our case evidence, we then systematically develop theoretical channels (links or considerations) to develop a base for empirical testing. Thus, the novelty of this study is not only the introduction of a hitherto missing source of corruption but also to systematically develop a theory linking military in politics and corruption by compiling evidence from around the world and scholarly arguments. In addition, while performing robustness analysis, we use a large number of control variables that have hitherto not been analyzed directly in literature. For instance, we use a variety of military related variables, such as military expenditure, military size, and arms trade. Similarly, we analyze institutional variables, such as religion in politics, investment profiles, internal conflict and external conflict. Given the above, our estimation equation is:

$$C_{it} = \alpha_{it} + \beta_1 MP_{it} + \beta_2 Y_{it} + \beta_3 X_{it} + \mu_i + \nu_t + \varepsilon_{it},$$
$$i = 1.....N; t = 1.....T,$$

where C_{it} denotes corruption, MP_{it} is an index for military involvement in politics and has a range between 0 to 6, X_{it} represents a set of control variables drawn from the existing corruption literature, Y_{it} is per capita income proxy for economic development/prosperity, u_i is

a country specific unobservable effect, v_t is a time specific factor and ε_{it} is an *i.i.d.* disturbance term. The expected sign for our key variable of interest β_1 is positive.

3.5.2 Estimation technique

We now discuss the estimation procedure used for our different corruption specifications. In order to maximize the sample size and produce efficient parameter estimates, we follow the norm in the corruption literature we use a panel data base, that is our data base has both time-series and cross-sectional dimensions. As is now well known, in the context of the corruption literature Ordinary Least Squares (OLS) is not an appropriate estimator since it suffers from the problem of omitted variable bias. For example, if a region, country or some group-specific factors affect corruption, the explanatory variables would capture the effects of these factors and estimates would not represent the true effect of the explanatory variables. To avoid this problem, Baltagi (2001) has proposed using fixed effect econometric techniques. However, in the presence of a lagged independent variable this technique also produces biased parameter estimates a Two Stage Least Square (2SLS) estimator is required which addresses both endogeniety and also the problem of omitted variables bias. In addition to the 2SLS estimator we also use alternative econometric techniques, such as Limited Information Maximum Likelihood (LIML), Generalized Methods of Moments (GMM) and System-GMM.

In this study, we rely mainly on the generalized method of Moments (GMM) estimation technique that has been developed for dynamic panel data analysis by Holtz-Eakin et al. (1990), Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1997). GMM controls for endogeneity of all the explanatory variables, allows for the inclusion of lagged dependent variables as regressors and accounts for unobserved country-specific effects. GMM estimation requires a sufficient instrument list and following the standard convention in the literature, the equations are estimated using lagged first differences as instruments.

3.6. Results and Discussions

In this study, our estimation proceeds in the following steps: First, we present estimates where we condition only on our key variable of interest, namely the military in politics. Second, in addition to using a panel data set we also present purely cross sectional estimates based on our total sample of countries. We also use the purely cross sectional data because: for

comparability purposes, since most of the existing literature is based on cross sectional studies; the variation in corruption is in fact dominant across countries rather than over time; it facilitates an extra robustness check of our results. Third, following the approach in other studies, and despite its deficiencies noted above, we also present results obtained using OLS econometric methods, before moving on to different econometric techniques which serve as robustness check and address the possible problem of endegeneity. Fourth, we introduce quantile regression analysis for military in politics in order to capture the distributional profile of the dependent variable, that is the corruption perception index.

Fifth, in order to address the problem of endogeneity, we employ different instruments, such as distance from the equator, legal origin and own lags of variables. Sixth, our overall data sample contains all available countries contained in the ICRG data set, which is 146, but this size is reduced to 129 because the economic freedom and per capita income terms are not available for all countries. We split the sample into developed and developing countries and conduct a separate analysis for developing countries. Seventh, we divide the world into seven regions: East Asia & Pacific, Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa, South Asia, Sub-Saharan Africa, Europe and Others. We prefer regional fixed effects over country fixed effects because variation in corruption comes across the regions for cultural and spacious reasons.

Eighth, we introduce an extensive list of corruption determinants while performing sensitivity analysis. During such sensitivity analysis we focus on two things. First, we use existing determinants of corruption that have been widely analyzed in the literature. Second, we focus on those determinants of corruption which are controversial in the literature or which have received least attention in other empirical studies. Ninth, although corruption does not have a widely accepted functional form (in the same way that, say, consumption is a function of income, almost every study employ PCY as determinate of corruption. Further more the recent literature on the robust determinants of corruption (see, for example, Serra, 2006) has shown that the level of economic development/prosperity is a robust determinate of corruption. We also therefore employ the level of development as a determinant. Tenth, in order to control for the time factor, we also introduce five time dummies that are based on five year averages 1988 (1984-88), 1993 (1989-93), 1998 (1994-98), 2003 (1999-03) and 2007.

Eleventh, we systematically replicate our findings while controlling for outliers: (1) we exclude those countries which have full scale military involvement in politics; (2) Similarly we exclude those countries which have minimum scale military involvement in politics; (3) We exclude those countries which are the most corrupt nations; (4) Finally we exclude those nations which are the least corrupt. Our main finding of the positive relationship between the military in politics and corruption remains robust (these results are not reported here but are available from the authors on request). Twelfth and finally, we replicate our findings using two alternative corruption indices, the Transparency International corruption index and World Bank corruption index. Our main findings are robust to the use of the alternative corruption indices as well; however, we do not report these results.

Table 3-3 reports the cross sectional estimation results for corruption and military in politics for 130 countries, over the period 1984-2007, for a range of specifications. The parameter estimates for the military in politics is significant with the correct sign across the different specifications. The coefficient on military in politics ranges from approximately 0.24 to 0.13 in last two columns of the table. So on the basis of the largest estimate, a one unit increase in the standard deviation of military in politics produces a 0.24 unit increase in the corruption index. The value of the R^2 is reasonably high and the p-value of the F-Stat is significant in all regressions. The level of economic development is consistently significant at the 1% level and that is consistent with earlier studies on corruption.

The economic freedom term also produces a significant coefficient at the 1% level of significance in all regressions, indicating that a higher degree of economic freedom reduces corruption, and this finding is consistent with a number of empirical studies, such as Treisman, 2000; Graeff and Mehlkop, 2003.

An important element that determines pervasiveness of corruption in the public sector of a country is ‘public morale’; that is, faith in country managers (authorities, policy makers). In nations where policies fail, or policy makers renege on their commitments and promises, the economy generates economic chaos that adversely affects economic morale. In this study we proxy this economic chaos with high inflation rates, since high inflation indicates macroeconomic imbalances. Furthermore, an important outcome of a high inflation rates is the redistribution of national wealth that may cause a further drop in the public morale. The

significantly positive coefficient on inflation would seem to support this hypothesis and our result here is consistent with Paldam (2002), and Braun-Di Tella (2004).

As a sensitivity analysis and a robustness check on the main findings in Table 3-3, we report in Tables 3-4 and 3-5 the results from conditioning on additional factors, HFI (High Financial Intermediation), common law, remittances, a colonial term and the share of Protestants in the population. For example, in Table 3-4 we replicate the results of Table 3-3 by only including developing countries. As can be seen the findings for the sample of developing countries are similar to the full sample of developed and developing countries.

The coefficient of military in politics remains in the range of 0.12 to 0.20 in our sensitivity analysis. Interestingly the highest value arises in the regression in which we control for the legal factor, common law, and the factor share of Protestants in the population. Of the additional conditioning variables all are correctly signed although the common law and colonial terms are not statistically significant.

How may the significantly negative coefficient on the religion term be explained? Religion is seen to affect the pervasiveness of corruption in a country since it influences the social and cultural characteristics of a society. In principle, religion is thought to discourage corruption. However, its influence may vary between hierarchal religious systems (such as, Catholicism, Eastern Orthodoxy and Islam), and egalitarian religions. In countries where equalitarian religions are prominent there is evidence that they tend challenge the status quo more frequently. For example, protestant churches have traditionally been apart from government and inclined to monitor abuses of the government (Treisman, 2000). Furthermore, La Porta et al. (1999) argue that religion may influence the quality of legal system that in turn affects the extent of corruption.

The sensitivity analyses reported in Table 3-4 indicates that our main findings are robust with the only change being that government spending loses its level of significance when we control for either common law or protestant. The R^2 statistic is also reasonably high in all regressions and the F-Stat is also significant in all regressions.

In Tables 3-6 to 3-8 we re-examine the basic specifications of Table 3-3 using both OLS and quantile regressions and different specification of the corruption model. Tables 3-6 to 3-8 include three variables as benchmark: military in politics, PCY and economic freedom. The specification in Table 3-6 includes inflation excluding government spending while the specification in Table 3-8 includes both inflation and government spending. We use a quantile regression analysis here as an additional robustness check. The quantile regression analysis was been initially introduced by Koenker and Bassett (1978) and provides parameter estimates at multiple points in the conditional distribution of a dependent variable.

Our quantile regression results are based upon 100 bootstrapping repetitions. In our estimations lower quantiles (e.g., Q 0.1) indicate least corrupt countries while higher quantiles (e.g., Q0.9) indicate most corrupt countries.

The estimates for OLS yield a base line of mean effects while quantile estimates provide conditional distribution of dependent of variable that is corruption. In both the OLS and quantile regressions, greater economic prosperity in a country is seen to lower corruption, which is consistent with the findings of several studies on the causes of corruption (see Serra, 2006). The results show that both political freedom and economic freedom help in reducing corruption. A larger government may devote more resources to strengthen the checks and balances and as a result reduce corruption. In the same way, a high quality bureaucracy is also helpful in reducing corruption.

The effect of the military in politics on corruption is always positive, generating high corruption indexes; it means military in politics is correlated with more corruption. The military in politics substantially fosters corruption. This effect is more pronounced in the half of the conditional distribution; i.e., among the mean/median corrupt countries.

The analysis of conditional distribution of our dependent variable (corruption) supports our main finding in two ways. First, main results of the study are not weakened by the observations lying in both tails of the distribution. Second, existing levels of corruption are not as important as military in politics matters in increasing existing levels of corruption.

The effect of economic freedom is nearly always negative, causing lower indexes; i.e., economic freedom is correlated with less corruption. However, the effect of inflation is more significant at lower quantiles as compared to higher quintiles, and this finding remains consistent even after controlling for government spending.

OLS estimates suggest inflation matters a lot in increasing corruption, but the quantile regression results do not uniformly confirm this. Specifically, controlling for government consumption, inflation substantially increases corruption, but only in the bottom bottom-half of the conditional distribution (among the less/least corrupt). As inflation increase in the less/least corrupt nations, ceteris paribus, they experience an increase in corruption.

Though inflation is the potential source of corruption in the OLS regression, its effect is not consistent in the quantile regression. Its effect is more significant in the lower part of the distribution; that is inflation promotes corruption in less and least corrupt nations while its effect is positive in top part of distribution but not significant.

The effect of government consumption is strongest at the median/mean of the conditional distribution. While comparing the tails of the distribution, this effect is significant in the upper most quantile, suggesting that increasing the size of government in most corrupt nations may reduce corruption.

In Table 3-9 we present the results for military in politics and corruption after controlling for regional effects. In the literature, corruption is considered as a regional phenomenon meaning that corruption varies more across regions (for cultural reasons) compared to variations within a region (see Paldam, 2002). In order to capture regional variations (heterogeneity) we introduce regional dummy variables to assess whether our main findings are robust to inclusion of regional specific dummy variables. The estimated coefficients of the dummy variables for Europe & Central Asia (ECA) and Latin America & Caribbean (LAC) are each positive and statistically highly significant. The results indicate that ECA and LAC regions are 0.7 and 0.6 points, respectively, more corrupt than the average for all countries. The dummy variables for all other regions are insignificant with positive signs, except East Asia and Pacific which is negatively signed. Our results are robust to inclusion of regional controls. The coefficient on military in politics fluctuates between 0.12 and 0.15 and it is highly significant

with the correct sign in all columns of the table. The effect of government spending is negative and significant but it is not robust. The results show that the positive effect of inflation on corruption is robustly significant.

Table 3-10 replicates the finding of Table 3-9 for a restricted sample of developing countries. The coefficient on military in politics slightly increases and fluctuates between 0.13 and 0.17. However, the direction of the link and level of significance are robust in the restricted sample as well. The effect of government spending is consistently negative and significant in the case of developing world which has been also confirmed from the quantile analysis that the role of government in fighting against corruption in more corrupt countries is pronounced. In the case of inflation results are opposite between sample. In case of whole sample, the positive effect of the inflation on corruption is robust while in the case of restricted sample level of significance slightly drops while the direction of link remains the same.

Corruption flourishes in an environment of unrestrained bureaucracy, but it can be contained when the laws of the land are vigorously enforced. Moreover, when the administration or the political order is considered as illegitimate, the social pressures against acts of corruption become less important. Corruption can therefore be effectively curtailed by an administration that enjoys an enduring legitimacy.

The level of corruption depends on the extent to which the laws of the land are binding and enforced. Corrupt officials are rational welfare maximizers, they weigh the pecuniary benefits from corruption against its cost. The personal cost of corruption is the loss of a job and the jail-time if caught and persecuted. Individuals will act corruptly so long as the perceived gains from corruption outweigh the costs. The probability of detection is lower the more lackadaisical the judicial system is. Judicial laxity reduces the opportunity cost of being corrupt. Hence, countries with strict laws and efficient judicial systems tend to be less corrupt and vice versa (Ali and Isse, 2003).

In a nutshell, the legal strengths of a country play an important role in reducing corruption levels. If nobody is above the law then the incidence of corrupt activities are least likely. This study uses a rule of law index as a proxy for the legal strength of a country. This index has been used by a number of studies such as (Ali and Isse, 2003 and Herzfeld and Weiss, 2003).

This index shows the extent to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes. This index also reflects the degree to which countries have a strong court system and an orderly succession of power. The expected sign for this variable is negative because both theory and empirical studies show that a strong rule of law curbs corruption-prone activities.

Recently, MacDonald and Majeed (2011) show in a sample of European countries that the rule of law in an important factor which can combat corruption. Their study finds robust relationship on this particular variable. The results of their study suggest that the coefficient on law fluctuates between 0.3 and 0.5. It implies that a one-standard-deviation increase in legal strength is associated with a decrease in corruption of 0.26 (or 0.43) points, 26% (or 40%) of a standard deviation in the corruption index.

Column eight in Table 3-12 shows benchmark results with an addition control of the rule of law. The coefficient on this variable turns out to be significant with expected negative sign. The effect of this variable appears to be more important in comparison to other control variables for following reasons. First, it is noteworthy that this represents a much larger effect on corruption than any of the other variables. Second, the level of significance for this variable is the highest. Third, the R2 also improves in the case of this variable. Fourth, the coefficient on military in politics slightly drops although level of significance and direction of the relationship remain robust. These all point altogether imply that law variable is an important determinant of corruption.

Column 8 (Table 3-14) reports the results for benchmark model using random effects econometric technique. Our observation on the rule of law variable is consistent in this as well. First, it is noteworthy that this represents a much larger effect on corruption than any of the other variables. Second R2 also improves in the case of this variable. In Table 3-17, this variable has been added in benchmark regression while performing sensitivity analysis with other variables. The effect of this variable is consistent in all the regressions.

3.7. Conclusion

In recent years attention has focused on the importance of the elimination of global corruption. For example, international organizations such as the United Nations and World Bank have been advocating anti-corruption measure, such as greater transparency in government deals and contracts. Additionally, individual governments have been improving and strengthening the rule of law to monitor and punish corrupt officials. Despite these initiatives, policy makers often face the challenge of isolating the various avenues of corruption because of a lack of understanding of the various causes of corruption. This is because some institutional, political and cultural effects on corruption are very subtle and hard to quantify. This study contributes to our understanding of the causes of corruption by identifying a novel avenue of corruption, namely military participation in politics. This source of corruption is extremely important for both academic researchers and policy makers as it stems from the institutional, cultural and political settings of a society which are usually hard to quantify.

We use both cross sectional and panel data for a large set of countries over a relatively long time period. To identify a relationship between military involvement in politics and corruption, we draw extensively on existing case studies, scholarly arguments, and historical evidence from around the world. Having done this, we systematically develop a theory which links the military, government and corruption and we test this empirically. The theoretical and empirical analysis of this study is unique because it analyzes the relationship between the military in politics and corruption and this has not hitherto been addressed in the literature. The analysis shows that the presence of the military in politics significantly adds to corruption in a society. In particular, the results reveal that a one standard deviation increase in the presence of military in politics leads to a 0.22 unit increase in corruption index. This effect arises because the presence of the military in politics expands the role of military officials in government and they usually hold the key to bureaucratic and administrative positions in the government machinery, controlling the scarce resources of the military sector, sectors related to military and other non productive activities. These sectors are least accountable to the public and so public resources can be exploited for private gain, in the control of elections, the distortion of market systems, and these can all cause a rise in corruption. Although even when the military are involved in the political process, resources are devoted to infrastructure and other development projects, the hidden motive behind such projects is the maximization of

rent, for example, with MNCs competing for business contracts through bribes instead of fair market competition.

Our study is also novel because it evaluates the conditional distribution of the military in politics and corruption using a quantile regression analysis. The results reveal that the effect of military in politics on corruption is always positive, causing high corruption indexes: the military in politics substantially fosters corruption. This effect is more pronounced in the half of the conditional distribution; i.e., among the mean/median corrupt countries. The analysis of the conditional distribution of our dependent variable (corruption) supports our main finding in two ways. First, the main results of the study are not weakened by the observations in both tails of the distribution. Second, existing levels of corruption are not as important as military in politics for increasing existing levels of corruption: the positive relationship between the military in politics is consistent through out the scale of corruption.

Another important feature of our analysis of the causes of corruption is that while considering a wide set of corruption sources we particularly focus on a key set of determinants of corruption, such as government spending and inflation. The results show that the effect of government spending is significantly and robustly negative. However, in quantile regressions, the effect of government consumption is strongest at the median/mean of the conditional distribution. While comparing tails of the distribution, this effect is significant in the upper most quantile, suggesting that increasing the size of government in the most corrupt nations may reduce corruption. In the case of inflation, OLS estimates suggest inflation matters a lot in increasing corruption, but quantile regression results do not uniformly confirm this. Specifically, controlling for government consumption, inflation substantially increases corruption, but only in the bottom bottom-half of the conditional distribution (among the less/least corrupt). As inflation increase in the less/least corrupt nations, ceteris paribus, they experience an increase in corruption.

Table 3-1: Description of Variables

Variable	Definitions	Sources
Per capita real GDP	GDP per capita (constant 2000 US$).	World Bank database World Bank (2008)
Secondary school enrollment	The secondary school enrollment as % of age group is at the beginning of the period. It is used as a proxy of investment in human capital.	World Bank database World Bank (2008)
Credit as % of GDP	Credit as % of GDP represents Claims on the non-financial private sector/GDP.	World Bank database World Bank (2008)
M2 as % of GDP	It represents Broad money/GDP.	World Bank database World Bank (2008)
Trade Liberalization	It is the sum of exports and imports as a share of real GDP. Data on exports, imports and real GDP are in the form of annual averages between survey years.	World Bank database World Bank (2008)
Corruption	ICRG corruption index rescaled from 0 (absence of corruption) to 6 (highest corruption).	International Country Risk Guide, PRS group.
Corruption	Transparency International corruption index rescaled from 0 (absence of corruption) to 10 (highest corruption).	Transparency International
Corruption	World Bank corruption index rescaled from -2.5 (absence of corruption) to 2.5 (highest corruption).	World Bank
Democracy	ICRG index 0-6 scale; where 6 indicate high degree of democracy.	International Country Risk Guide, PRS group.
Military in Politics	ICRG index rescaled 0-6; higher risk ratings (6) indicate a greater degree of military participation in politics and a higher level of political risk.	International Country Risk Guide, PRS group.
Religion in Politics	ICRG index 0-6 scale: higher ratings are given to countries where religious tensions are minimal.	International Country Risk Guide, PRS group.
Ethnic Tensions	ICRG index 0-6 scale; higher ratings are given to countries where tensions are minimal.	International Country Risk Guide, PRS group.
Rule of Law	ICRG index 0-6 scale; where 6 indicate high degree of law and order.	International Country Risk Guide, PRS group.
Bureaucracy Quality	ICRG index 0-4 scale; where 4 indicate high degree of law and order.	International Country Risk Guide, PRS group.
Government Stability	ICRG index 0-12 scale; where 0 indicates very high risk and 12 indicates very low risk.	International Country Risk Guide, PRS group.
Socioeconomic Conditions	ICRG index 0-12 scale; where 0 indicates very high risk and 12 indicates very low risk.	International Country Risk Guide, PRS group.
Investment Profiles	ICRG index 0-12 scale; where 0 indicates very high risk and 12 indicates very low risk.	International Country Risk Guide, PRS group.
Internal Conflict	ICRG index 0-12 scale; where 0 indicates very high risk and 12 indicates very low risk.	International Country Risk Guide, PRS group.
External Conflict	ICRG index 0-12 scale; where 0 indicates very high risk and 12 indicates very low risk.	International Country Risk Guide, PRS group.
Economic Freedom	Freedom House data. index rescaled 0 (low economic freedom)-7 (high economic freedom)	Fraser Institute.
HFI	The level of Financial Intermediation is determined by adding M2 as a % of GDP and credit to private sector as % of GDP.	World Bank database World Bank (2008)
Inflation	Inflation, consumer prices (annual %)	World Bank database World Bank (2008)
Government Spending	General government final consumption expenditure (% of GDP)	World Bank database World Bank (2008)
Remittances	Workers' remittances and compensation of employees, received (% of GDP)	World Bank database World Bank (2008)
Military Spending	Military expenditure (% of GDP)	World Bank database World Bank (2008)
Arm Trade	Arms exports plus arms imports (constant 1990 US$)	World Bank database World Bank (2008)
Urbanization	Urban Population	World Bank database World Bank (2008)

British Colony	A dummy variable that is 1 for British Colony	http://flagspot.net/flags/gb-colon.html
Common Law	Binary variable which equals 1if the country's company law or commercial code is English common law, equals 0 otherwise	Treisman (2000)
Protestant	Share of Protestants in 1980	Treisman (2000)
British	British legal origin	La Porta et al. (1997)
French	French legal origin	La Porta et al. (1997)
Scandinavian	Scandinavian legal origin	La Porta et al. (1997)
Socialist	Socialist legal origin	La Porta et al. (1997)
Germany	Germany legal origin	La Porta et al. (1997)
Equator	Distance from equator	La Porta et al. (1997)

Table 3-2: Summary Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Corruption	675	2.932585	1.322528	-.0333328	6
Per Capita Income	653	6949.03	9566.997	84.89059	53800.33
Remittances	523	2.847373	4.769296	.0018351	42.54366
High Financial Lib.	562	95.77334	197.5284	5.237262	4410.351
Openness	644	78.72449	47.99039	2.566213	442.2996
Government	635	16.04497	6.173756	4.05478	46.35652
Democracy	675	3.6823	1.607773	0	6
Economic Freedom	673	4.403913	1.942066	1	7
Urbanization	693	1.81e+07	4.72e+07	91250.07	5.34e+08
Military in Politics	675	3.715646	1.785895	0	6.033333
Bureaucracy Quality	675	2.139725	1.171961	0	4
Socio Economic	675	5.68345	2.131201	.0208333	10.775
Government Stability	675	7.566057	2.006066	1.466667	11.5
Internal conflict	675	8.765272	2.564226	.0333333	12
External conflict	675	9.604507	2.118613	0	12
Investment Profiles	675	7.057228	2.339163	.8000001	12
Religion in Politics	675	4.591332	1.320474	0	6
Rule of Law	675	3.667232	1.45727	.55	6
Ethno linguistic	675	3.932934	1.427448	0	6
Consumer P Index	621	41152.82	1023276	7.20e-10	2.55e+07
Inflation	615	74.31995	434.1466	-4.207125	6523.051
Credit Private	635	103.5882	775.4475	.7621964	12437.82
Net Users	554	9.167496	16.75737	0	82.23592
Military Sp/Government	296	10.34746	9.270922	0	53.5601
Military Sp/GDP	583	2.785165	3.350683	0	43.7737
Education	633	66.66573	32.51444	3.31139	156.3496
Arm exports	276	4.20e+08	1.52e+09	0	1.27e+10
Aram imports	573	2.06e+08	4.05e+08	0	3.70e+09
Arm Trade	259	7.99e+08	1.63e+09	8666667	1.33e+10

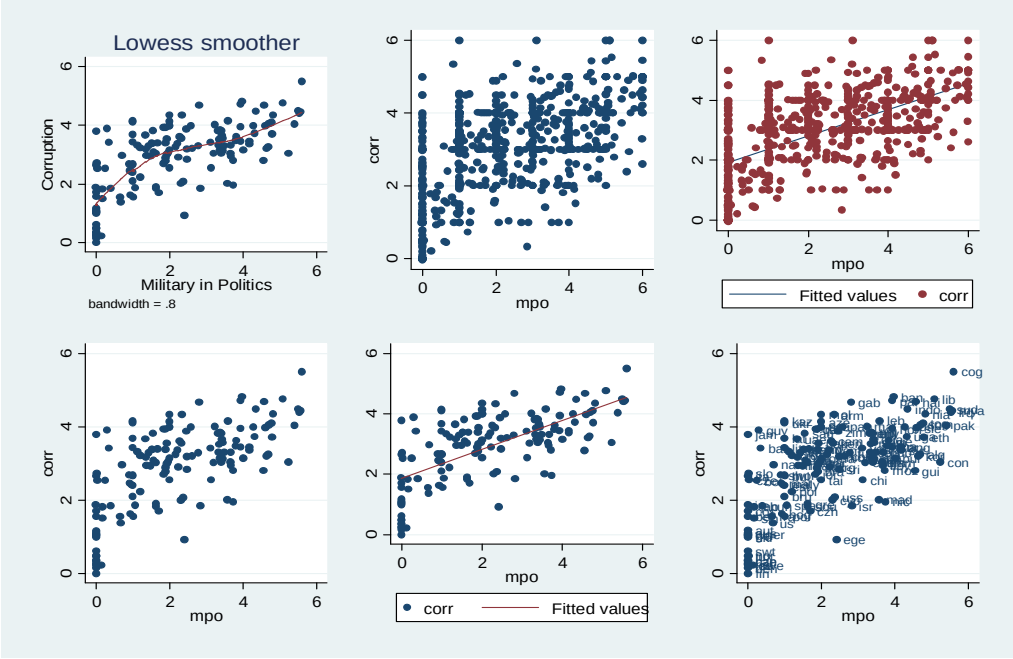


Figure 3-1: Corruption and Military in Politics

Figure 3-2: Corruption and Military in Politics in Developing Countries

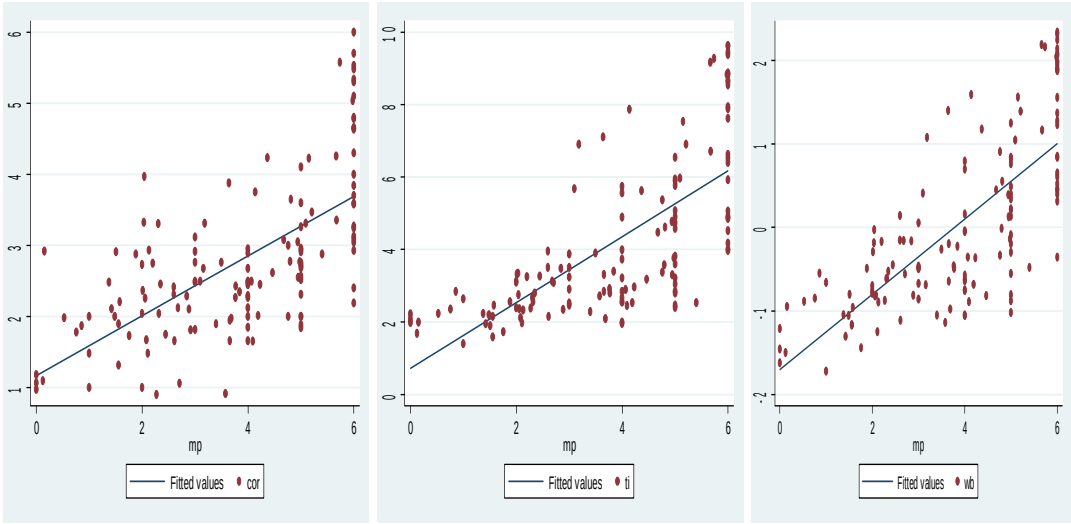


Figure 3-3: Figure 3 a **Figure 3b** **Figure 3c**

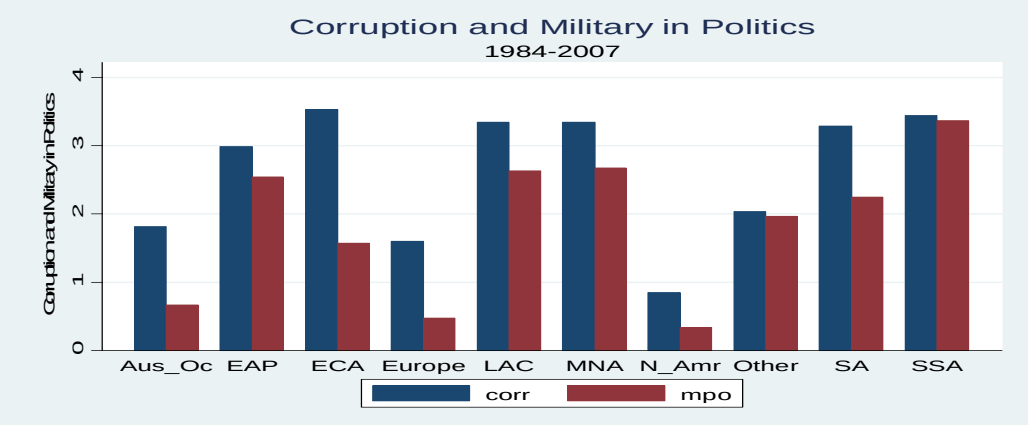


Figure 3-4: Corruption and Military in Politics (Regional Trends)

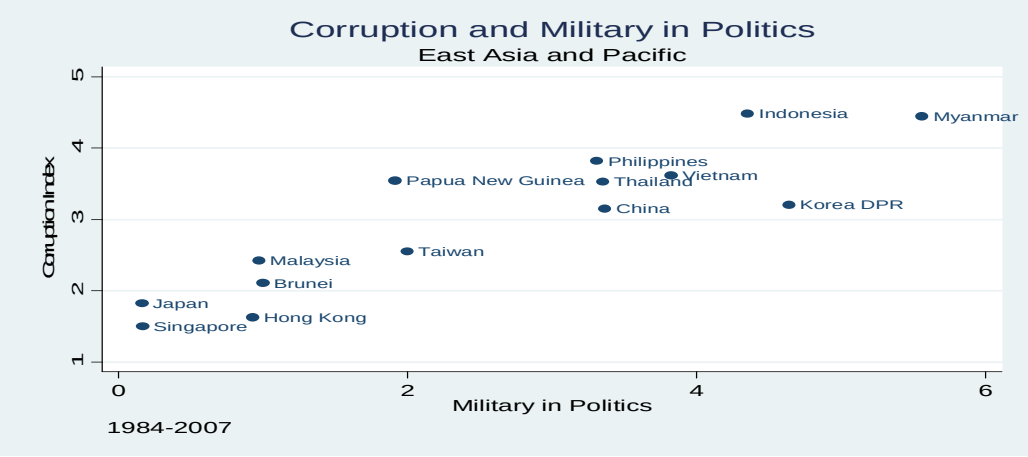


Figure 3-5: Corruption and Military in Politics (East Asia and Pacific)

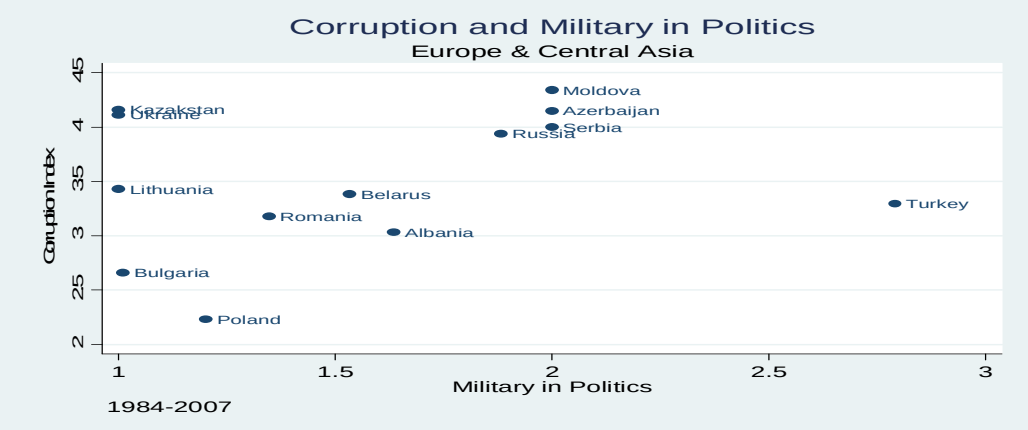


Figure 3-6: Corruption and Military in Politics (Europe and Central Asia)

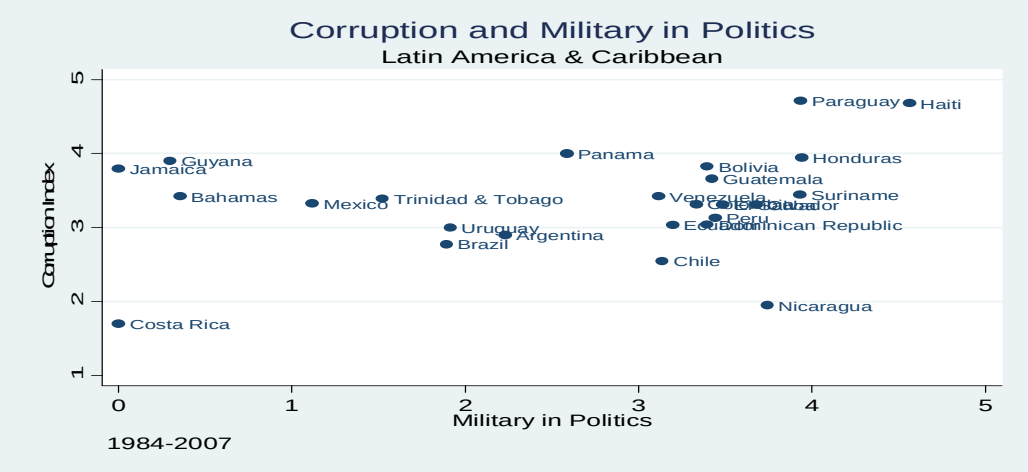


Figure 3-7: Corruption and Military in Politics (Latin America and Caribbean)

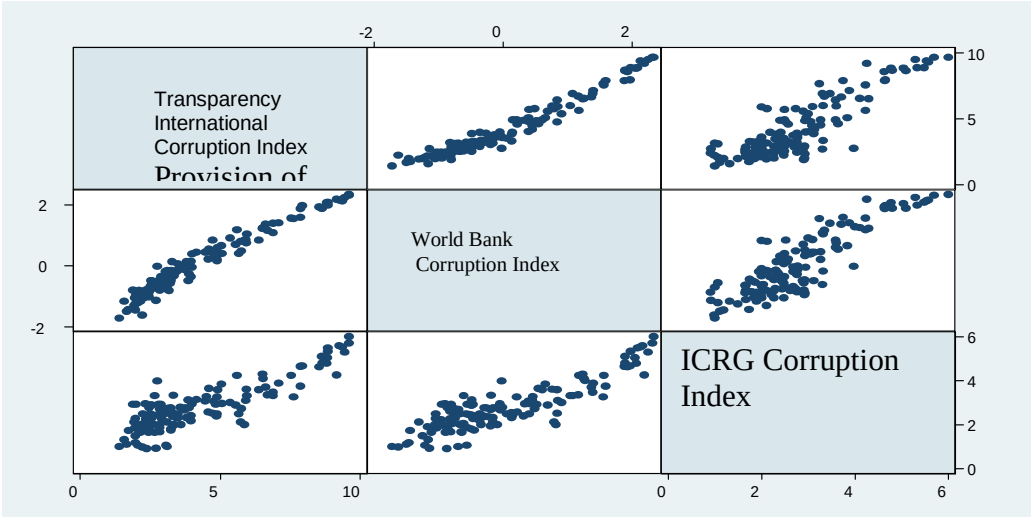


Figure 3-8: Alternative Corruption Indices (Correlation)

Table 3-3: Corruption and Military in Politics: Cross Sectional (CS) Estimation (I)

Variables	Dependent Variable: Corruption				
Military in Politics	0.48 (10.74)*	0.26 (5.13)*	0.15 (2.70)*	0.12 (1.96)*	0.12 (2.09)**
PCY		-0.000 (-7.09)*	-0.000 (-6.40)*	-0.000 (-5.99)*	-0.000 (-6.20)*
Economic Freedom			-0.19 (-4.18)*	-0.21 (-4.88)*	-0.18 (-3.97)*
Government Spending				-0.02 (-1.62)***	-0.02 (-1.88)***
Inflation					0.000 (2.18)**
R	0.45	0.60	0.65	0.65	0.68
Adj. R	0.44	0.59	0.64	0.64	0.67
F	115.25 (0.000)	98.57 (0.000)	80.06 (0.000)	58.54 (0.000)	52.28 (0.000)
Observations	146	135	132	130	128

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-4: Corruption and Military in Politics: CS Estimation (II) for Developing Countries

Variables	Dependent Variable: Corruption				
Military in Politics	0.21 (4.65)*	0.24 (5. 41)*	0.18 (3.60)*	0.134 (2.47)*	0.133 (2.47)*
Economic Prosperity		-0.114 (-3.52)*	-0.117 (-3.50)*	-0.127 (-3.83)*	-0.108 (-3.16)*
Economic Freedom			-0.086 (-1.76)*	-0.10 (-1.98)*	-0.104 (-2.01)**
Government Spending				-0.024 (-1.98)***	-0.027 (-2.27)***
Inflation					0.0005 (1.73)***
R	0.18	0.29	0.30	0.32	0.36
Adj. R	0.17	0.27	0.27	0.29	0.32
F	21.64 (0.000)	18.65 (0.000)	12.67 (0.000)	10.10 (0.000)	9.34 (0.000)
Observations	99	96	94	92	89

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-5: Corruption and Military in Politics: CS Estimation (III): Sensitivity Analysis

Variables	Dependent Variable: Corruption						
Military in Politics	0.12 (1.96)*	0.12 (2.09)**	0.12 (2.06)**	0.11 (2.03)**	0.12 (1.94)**	0.21 (3.25)*	0.20 (3.10)*
PCY	-0.000 (-5.99)*	-0.000 (-6.20)*	-0.000 (-4.43)*	-0.000 (-7.46)*	-0.000 (-5.80)*	-0.000 (-5.95)*	-0.000 (-5.63)*
Economic Freedom	-0.21 (-4.88)*	-0.18 (-3.97)*	-0.18 (-3.82)*	-0.096 (-1.84)***	-0.22 (-4.54)*	-0.15 (-2.72)*	-0.14 (-2.59)*
Government Spending	-0.02 (-1.62)***	-0.02 (-1.88)***	-0.02 (-1.50)	-0.03 (-2.06)**	-0.02 (-1.65)***	-0.02 (-1.56)	-0.01 (-1.08)
Inflation		0.000 (2.18)**					
HFI			-.001 (-1.84)***				
Remittances				0.02 (1.60)***			
British Colony					0.025 (0.18)		
Common law						0.01 (0.09)	
Protestant							-0.007 (-2.16)**
R	0.65	0.68	0.58	0.71	0.71	0.75	0.77
Adj. R	0.64	0.67	0.57	0.70	0.70	0.74	0.76
F	58.54 (0.000)	52.28 (0.000)	31.06 (0.000)	55.11 (0.000)	55.11 (0.000)	52.64 (0.000)	56.46 (0.000)
Observations	130	128	117	119	119	91	91

Note: *, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-6: Corruption and Military in Politics: OLS vs. Quintile Regression: specification 1

Variables	OLS	Q0.1	Q0.25	Q0.50	Q0.75	Q0.9
Military in Politics	0.16 (2.89)*	0.064 (0.76)	0.20 (2.78)*	0.20 (2.88)*	0.09 (1.08)	0.13 (1.12)
PCY	-0.000 (-6.65)*	-0.000 (-4.97)*	-0.000 (-4.59)*	-0.000 (-4.38)*	-0.000 (-3.34)*	-0.000 (-2.66)*
Economic Freedom	-0.17 (-3.68)*	-0.29 (-3.31)*	-0.29 (-2.30)*	-0.14 (-2.42)*	-0.20 (-2.48)*	-0.14 (-1.20)*
Inflation	0.0006 (-1.99)*	0.0009 (2.16)*	0.0007 (1.96)**	0.0008 (1.54)	0.0006 (1.15)	0.0004 (0.90)
R	0.68	0.56	0.53	0.41	0.32	0.29
Adj. R	0.67					
F	65.29 (0.000)	42.69 (0.000)	26.00 (0.000)	43.03 (0.000)	17.96 (0.000)	6.97 (0.000)
Observations	129	129	129	129	129	129

Notes: Dependent Variable is corruption perception index from ICRG
Regressions include 120-122 observations of country level data.
Quantile regression results are based upon 100 bootstrapping repetitions.
Lower quantiles (e.g., Q 0.1) signify less corrupt nations.
All regressions include an intercept term but the results are not reported.
F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero.
The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 3-7: Corruption and Military in Politics (CS): OLS vs. Quintile Regression: Specification 2

Variables	OLS	Q0.1	Q0.25	Q0.50	Q0.75	Q0.9
Military in Politics	0.15 (2.70)*	0.061 (0.67)	0.19 (2.78)*	0.20 (3.83)*	0.16 (1.74)***	0.04 (0.40)
PCY	-0.000 (-6.40)*	-0.000 (-4.63)*	-0.000 (-5.00)*	-0.000 (-5.78)*	-0.000 (-2.48)*	-0.000 (-2.52)*
Economic Freedom	-0.39 (-4.18)	-0.24 (-2.65)	-0.12 (-2.36)	-0.15 (-2.71)	-0.19 (-2.13)	-0.29 (-2.86)
R	0.65	0.54	0.50	0.39	0.29	0.27
Adj. R	0.64					
F	80.06	48.69 (0.000)	38.28 (0.000)	77.81 (0.000)	15.97 (0.000)	1014 (0.000)
Observations	132	132	132	132	132	132

Notes: Dependent Variable is corruption perception index from ICRG
Regressions include 120-122 observations of country level data.
Quantile regression results are based upon 100 bootstrapping repetitions.
Lower quantiles (e.g., Q 0.1) signify less corrupt nations.
All regressions include an intercept term but the results are not reported.
F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero.
The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 3-8: Corruption and Military in Politics (CS): OLS vs. Quintile Regression: Specification 3

Variables	OLS	Q0.1	Q0.25	Q0.50	Q0.75	Q0.9
Military in Politics	0.12	0.11	0.14	0.20	0.13	0.002
	(2.09)*	(1.09)	(2.17)**	(2.71)**	(1.26)	(0.02)
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-6.20)*	(-2.97)*	(-5.88)*	(-4.41)*	(-3.05)*	(-2.00)**
Economic Freedom	-0.18	-0.21	-0.21	-0.14	-0.14	-0.27
	(-3.97)*	(-2.58)*	(-1.71)***	(-1.83)***	(-2.15)**	(-2.59)**
Inflation	0.0007	0.0009	0.0008	0.0008	0.0005	0.0002
	(2.18)**	(3.07)*	(2.48)*	(1.39)	(0.91)	(0.43)
Government Spending	-0.022	-0.025	-0.023	-0.01	-0.023	-0.04
	(-1.88)***	(-0.58)	(-1.60)	(-0.89)	(-1.26)	(-1.72)***
R	0.68	0.60	0.54	0.52	0.32	0.31
Adj. R	0.67					
F	52.88	42.05	45.50	30.32	13.83	6.91
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	128	128	128	128	128	128

Notes: Dependent Variable is corruption perception index from ICRG
Regressions include 120-122 observations of country level data.
Quantile regression results are based upon 100 bootstrapping repetitions.
Lower quantiles (e.g., Q 0.1) signify less corrupt nations.
All regressions include an intercept term but the results are not reported.
F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero.
The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 3-9: Corruption and Military in Politics: CS Estimation (IV): Regional Effects

Variables	Dependent Variable: Corruption						
Military in Politics	0.12	0.12	0.163	0.148	0.156	0.143	0.131
	(2.09)**	(2.03)**	(2.69)*	(2.50)*	(2.62)*	(2.41)*	(2.17)**
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-6.20)*	(-6.11)*	(-5.43)*	(-4.79)*	(-4.93)*	(-4.81)*	(-4.49)*
Economic Freedom	-0.18	-0.19	-0.17	-0.22	-0.18	-0.20	-0.20
	(-3.97)*	(-3.94)*	(-3.62)*	(-4.40)*	(-3.28)*	(-3.62)*	(-3.27)*
Government Spending	-0.02	-0.02	-0.02	-0.014	-0.017	-0.019	-0.019
	(-1.88)***	(-1.90)***	(-1.68)***	(-1.28)	(-1.42)	(-1.6)***	(-1.6)***
Inflation	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(2.18)**	(2.13)**	(1.84)***	(1.62)***	(1.83)***	(1.74)***	(1.65)***
East Asia & Pacific		-0.08	-0.014	0.062	0.13		
		(-0.035)	(-0.06)	(0.29)	(0.57)		
Europe & Central Asia			0.438	0.555	0.60	0.59	0.72
			(2.13)**	(2.70)**	(2.87)**	(2.91)**	(2.94)**
Lat America & Caribbean				0.452	0.451	0.468	0.60
				(2.68)*	(2.68)*	(2.76)*	(2.60)*
Middle East & North Africa					0.27	0.26	0.39
					(1.23)	(1.21)	(1.54)
South Asia						0.30	0.45
						(0.97)	(1.30)
Sub-Saharan Africa							0.21
							(1.00)
Europe							0.083
							(1.37)
R	0.68	0.68	0.70	0.71	0.72	0.72	0.72
Adj. R	0.67	0.67	0.68	0.69	0.70	0.70	0.70
F	52.28	43.77	39.26	37.02	33.22	33.46	27.23
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	128	128	128	128	128	128	128

Note: *, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-10: Corruption and Military in Politics: CS Estimation (V): Regional Effects in Developing Countries

Variables	Dependent Variable: Corruption						
Military in Politics	0.133	0.137	0.171	0.171	0.159	0.160	0.153
	(2.47)*	(2.53)*	(2.91)*	(2.82)*	(2.62)*	(2.70)*	(2.51)*
Economic Prosperity	-0.108	-0.119	-0.105	-0.105	-0.125	-0.122	-0.124
	(-3.16)*	(-3.27)*	(-2.81)*	(-2.77)*	(-3.12)*	(-3.10)*	(-3.09)*
Economic Freedom	-0.104	-0.101	-0.092	-0.09	-0.101	-0.105	-0.142
	(-2.01)**	(-1.95)**	(-1.77)***	(-1.62)***	(-1.6)***	(-2.01)**	(-2.00)**
Government Spending	0.027	-0.026	-0.03	-0.03	-0.025	-0.027	-0.0228
	(2.27)***	(-2.15)**	(-2.00)**	(-1.97)**	(-2.06)**	(-2.19)**	(-1.77)***
Inflation	0.0005	0.0005	0.0005	0.000	0.0004	0.0004	0.0004
	(1.73)***	(1.73)***	(1.7)***	(1.63)***	(1.46)	(1.5)	(1.32)
East Asia & Pacific		0.204	0.223	0.221	0.27	0.28	0.87
		(0.89)	(0.98)	(0.94)	(1.02)	(1.22)	(1.57)
Europe & Central Asia			0.276	0.274	0.257	0.25	0.68
			(1.43)	(1.39)	(1.17)	(1.12)	(1.22)
Lat America & Caribbean				0.000			0.68
				(0.000)			(1.22)
Middle East & North Africa				-0.009	0.013		0.555
				(-0.04)	(0.05)		(1.08)
South Asia					0.42	0.43	1.03
					(1.38)	(1.56)	(1.78)***
Sub-Saharan Africa					-0.036		0.552
					(-0.20)		(1.08)
Europe						0.375	0.71
						(0.89)	(1.40)
R	0.36	0.37	0.38	0.38	0.40	0.41	0.42
Adj. R	0.32	0.32	0.33	0.32	0.33	0.34	0.33
F	9.34	7.90	7.15	6.18	5.21	6.00	4.55
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	89	89	89	89	89	89	89

Note: *, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-11: Corruption and Military in Politics: Panel Estimation

Variables	Dependent Variable: Corruption					
Military in Politics	0.44 (19.08)*	0.27 (9.93)*	0.18 (6.03)*	0.098 (3.21)*	0.074 (2.34)**	0.15 (-4.73)**
PCY		-0.000 (-11.00)*	-0.000 (-9.92)*	-0.000 (-5.11)*	-0.000 (-4.95)*	-0.000 (-9.21)*
Democracy			-0.21 (-6.75)*	-0.21 (-4.26)*	-0.14 (-4.51)*	-0.22 (-6.88)*
Bureaucracy Quality				-0.41 (-7.58)*	-0.39 (-6.92)*	-
Government Spending					-0.02 (-2.94)*	-0.03 (-3.78)*
R	0.35	0.46	0.50	0.54	0.54	0.54
Adj. R	0.35	0.46	0.49	0.53	0.53	0.53
F	364.11 (0.000)	263.47 (0.000)	203.48 (0.000)	180.88 (0.000)	137.58 (0.000)	148.34 (0.000)
Observations	675	675	622	622	602	602

Note: *, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-12: Corruption and Military in Politics: Panel Estimation: Sensitivity Analysis (I)

Variables	Dependent Variable: Corruption							
Military in Politics	0.26	0.16	0.27	0.21	0.23	0.31	0.16	0.22
	(8.93)*	(5.06)*	(9.22)*	(6.23)*	(7.24)*	(10.39)*	(5.18)*	(7.33)*
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-10.98)*	(-9.60)*	(-11.29)*	(-10.50)*	(-10.98)*	(-12.43)*	(-7.03)*	(-10.78)*
Government Spending	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.03
	(-3.90)*	(-4.33)*	(-3.71)*	(-4.14)*	(-4.33)*	(-3.48)*	(-3.47)*	(-4.20)*
Openness	0.004	0.003	0.003	0.004	0.004	0.003	0.004	0.004
	(4.36)*	(3.13)	(3.83)*	(4.75)*	(4.52)*	(3.26)*	(4.47)*	(4.35)*
Democracy		-0.20						
		(-6.31)*						
Government Stability			0.06					
			(2.58)*					
Internal Conflict				-0.06				
				(-2.71)*				
External Conflict					-0.06			
					(-2.67)*			
Investment Profiles						0.12		
						(5.58)*		
Rule of Law							-0.28	
							(-7.19)*	
Religion in Politics								-0.13
								(-3.84)*
R	0.48	0.51	0.48	0.48	0.48	0.52	0.50	0.49
Adj. R	0.47	0.51	0.48	0.48	0.48	0.51	0.50	0.49
F	135.45	123.41	110.72	110.98	110.90	127.98	120.07	113.82
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	602	598	598	598	598	598	598	598

Note: *, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-13: Corruption and Military in Politics: Panel Estimation: Sensitivity Analysis (II)

Variables	Dependent Variable: Corruption								
Military in Politics	0.26 (8.93)*	0.23 (7.68)*	0.15 (3.44)*	0.26 (9.03)*	0.20 (6.96)*	0.23 (7.69)*	0.37 (6.50)*	0.26 (8.91)*	0.26 (9.82)*
PCY	-0.000 (-10.98)*	-0.000 (-10.5)*	-0.000 (-10.11)*	-0.000 (-11.13)*	-0.000 (-11.82)*	-0.000 (-9.06)*	-0.000 (-6.48)*	-0.000 (-11.70)*	-0.000 (-12.75)*
Government Spending	-0.03 (-3.90)*	-0.03 (-4.11)*	-0.03 (-3.09)*	-0.03 (-3.74)*	-0.04 (-5.08)*	-0.024 (-3.26)*	-0.04 (-3.11)*	-0.03 (-3.38)*	-0.02 (-2.98)*
Openness	0.004 (4.36)*	0.004 (4.33)*	0.003 (2.32)*	0.004 (4.70)*	0.004 (4.06)*	0.004 (4.08)*	0.005 (3.34)*	0.003 (3.89)*	0.002 (2.44)*
Ethnic Tensions		-0.08 (-2.61)*							
Military Spending			0.012 (1.94)**						
Urbanization				0.000 (1.86)***					
Remittances					0.021 (2.45)*				
HFI						-0.0004 (-2.06)**			
Arm Trade							0.000 (1.53)		
Inflation								0.0002 (2.36)*	
Yr1993									-0.12 (-1.04)*
Yr1998									-0.06 (-0.48)
Yr2003									0.60 (5.18)*
Yr2007									0.92 (7.86)*
R	0.48	0.48	0.54	0.48	0.55	0.41	0.53	0.52	0.58
Adj. R	0.47	0.48	0.53	0.47	0.54	0.40	0.52	0.52	0.57
F	135.45 (0.000)	110.78 (0.000)	63.95 (0.000)	109.50 (0.000)	120.14 (0.000)	70.72 (0.000)	50.88 (0.000)	121.42 (0.000)	99.23 (0.000)
Observations	602	598	598	598	501	517	230	566	598

Note: *, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-14: Corruption and Military in Politics: Panel Estimation using Random Effects: Sensitivity Analysis (I)

Variables	Dependent Variable: Corruption							
Military in Politics	0.24	0.22	0.26	0.22	0.22	0.30	0.16	0.21
	(7.36)*	(6.07)*	(7.83)*	(5.81)*	(6.50)*	(9.41)*	(4.70)*	(6.01)*
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-5.13)*	(-5.52)*	(-5.39)*	(-5.13)*	(-5.33)*	(-7.41)*	(-3.55)*	(-4.98)*
Government Spending	-0.036	-0.036	-0.03	-0.04	-0.04	-0.03	-0.04	-0.04
	(-4.25)*	(-4.35)*	(-3.66)*	(-4.42)*	(-4.56)*	(-2.93)*	(-4.52)*	(-4.35)*
Openness	0.006	0.006	0.005	0.007	0.006	0.004	0.006	0.006
	(5.36)*	(5.06)	(4.49)*	(5.54)*	(5.55)*	(3.24)*	(5.50)*	(5.43)*
Democracy		-0.07						
		(-2.03)**						
Government Stability			0.063					
			(3.58)*					
Internal Conflict				-0.03				
				(-1.63)***				
External Conflict					-0.04			
					(-2.02)**			
Investment Profiles						0.155		
						(8.93)*		
Rule of Law							-0.22	
							(-5.65)*	
Religion in Politics								-0.13
								(-3.18)*
RB	0.53	0.57	0.55	0.54	0.54	0.55	0.57	0.54
RO	0.45	0.48	0.46	0.46	0.46	0.49	0.50	0.46
Observations	602	598	598	598	598	598	598	598

Note: *, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-15: Corruption and Military in Politics: Panel Estimation using Random Effects: Sensitivity Analysis (II)

Variables	Dependent Variable: Corruption								
Military in Politics	0.24 (7.36)*	0.22 (6.21)*	0.16 (3.24)*	0.24 (7.38)*	0.20 (5.93)*	0.25 (7.52)*	0.20 (6.11)*	0.23 (6.77)*	0.23 (7.96)*
PCY	-0.000 (-5.13)*	-0.000 (-4.84)*	-0.000 (-6.91)*	-0.000 (-5.29)*	-0.000 (-6.95)*	-0.000 (-5.73)*	-0.000 (-5.03)*	-0.000 (-3.86)*	-0.000 (-7.56)*
Government Spending	-0.036 (-4.25)*	-0.04 (-4.59)*	-0.04 (-3.32)*	-0.04 (-4.13)*	-0.04 (-4.36)*	-0.03 (-3.29)*	-0.03 (-3.50)*	-0.04 (-4.32)*	-0.02 (-2.51)*
Openness	0.006 (5.36)*	0.006 (5.43)*	0.004 (2.93)*	0.007 (5.72)*	0.006 (4.71)*	0.006 (5.23)*	0.005 (4.44)*	0.006 (5.37)*	0.002 (1.65)***
Ethnic Tensions		-0.097 (-2.65)*							
Military Spending			0.003 (0.37)						
Urbanization				0.000 (2.50)*					
Remittances					0.014 (1.5)				
Inflation						0.000 (1.68)***			
HFI							-0.0002 (-1.20)		
Socioeconomic Conditions								-.05 (-1.91)***	
Yr1993									-0.15 (-1.87)*
Yr1998									-0.09 (-1.12)
Yr2003									0.54 (6.53)*
Yr2007									0.85 (9.76)*
RB	0.53	0.54	0.61	0.52	0.68	0.58	0.47	0.54	0.64
RO	0.45	0.46	0.52	0.45	0.54	0.49	0.40	0.46	0.57
Observations	602	598	598	598	501	566	517	598	598

Note: *, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-16: Corruption and Military in Politics: Panel Estimation using Alternative Techniques

Variables	2SLS			LIML			GMM		
Military in Politics	0.11	0.14	0.09	0.11	0.14	0.09	0.11	0.14	0.08
	(2.15)**	(2.75)*	(1.7)***	(2.15)**	(2.75)*	(1.7)***	(2.26)*	(2.93)*	(1.61)***
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-7.62)*	(-7.98)*	(-5.11)*	(-7.61)*	(-7.98)*	(-5.11)*	(-7.37)*	(-7.55)*	(-5.18)*
Economic	-0.19	-0.16	-0.13	-0.19	-0.16	-0.13	-0.20	-0.17	-0.13
Freedom	(-5.08)*	(-3.83)*	(-3.27)*	(-5.08)*	(-3.81)*	(-3.27)*	(-5.25)*	(-4.13)*	(-3.55)*
Government	-.019	-.020	-.017	-.019	-.020	-.017	-.019	-.019	-.017
Spending	(-1.7)***	(-1.7)***	(-1.6)***	(-1.7)***	(-1.7)***	(-1.6)***	(-1.8)***	(-1.7)***	(-1.7)***
Openness	0.001	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.002
	(1.66)***	(1.62)***	(1.7)***	(1.66)***	(1.62)***	(1.73)***	(1.48)	(1.40)	(1.61)***
Inflation		0.000	0.000		0.000	0.000		0.000	0.000
		(0.65)	(2.59)*		(0.64)	(2.59)*		(0.68)	(3.93)*
Bureaucracy			-0.24			-0.24			-0.24
Quality			(-2.70)			(-2.69)			(-2.98)
Sargan	0.83	0.98	1.28	0.84	0.99	1.28			
	(0.36)	(0.32)	(0.53)	(0.36)	(0.32)	(0.53)			
Basmann	0.81	0.96	1.24	0.81	0.96	0.62			
	(0.36)	(0.32)	(0.54)	(0.37)	(0.33)	(0.54)			
Hansen							0.66	0.85	1.44
							(0.42)	(0.36)	(0.49)
Wald	382.38	417.02	453.13	382.386	416.96	457.05	375.88	418.20	482.54
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R	0.53	0.57	0.60	0.53	0.57	0.60	0.53	0.57	0.60
Observations	340	324	324	340	324	324	340	324	324

Note: *, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 3-17: Corruption and Military in Politics: Panel Estimation: System GMM

Variables	Dependent Variable: Corruption							
Military in Politics	0.08 (1.70)***	0.08 (1.62)*	0.096 (2.06)**	0.08 (1.60)***	0.09 (1.99)**	.096 (2.30)*	0.10 (2.42)*	0.11 (2.87)*
PCY	-0.000 (-2.83)*	-0.000 (-2.70)*	0.000 (-4.06)*	-0.000 (-2.87)*	-0.000 (-3.68)*	-0.000 (-5.19)*	-0.000 (-5.73)*	-0.000 (-5.90)*
Economic Freedom	-0.14 (-3.52)*	-0.04 (-3.47)*	-0.14 (-3.66)*	-0.15 (-3.56)*	-0.14 (-3.72)*	-0.11 (-2.84)*	-0.12 (-3.34)*	-0.11 (-3.52)*
Rule of Law	-0.33 (-6.55)*	-0.006 (-6.19)*	-0.31 (-6.36)*	-0.31 (-6.13)*	-0.34 (-6.4)*	-0.29 (-6.25)*	-0.26 (-5.67)*	-0.29 (-6.55)*
Openness		0.001 (0.89)				0.002 (1.73)***	0.001 (1.25)	
Inflation			0.000 (0.65)				0.000 (1.49)	0.000 (2.58)*
Government Stability				0.069 (1.95)**				
Socioeconomic Conditions					0.11 (2.05)**			
Government Spending						-0.019 (-1.82)***	-0.017 (-1.62)***	-0.017 (-1.62)***
Urbanization								0.000 (0.82)
Yr1988	-1.14 (-8.88)*	-1.12 (-8.29)*	-1.19 (-10.32)*	-1.31 (-9.16)*	-1.19 (-9.15)*	-1.02 (-7.27)*	-1.05 (-7.62)*	-1.16 (-10.70)*
Yr1993	-1.24 (-11.1)*	-1.22 (-10.19)*	-1.25 (-12.60)*	-1.41 (-10.24)*	-1.26 (-10.39)*	-1.11 (-9.59)*	-1.12 (-10.35)*	-1.17 (-12.68)*
Yr1998	-0.86 (-8.69)*	-0.84 (-7.80)*	-0.88 (-10.53)*	-0.93 (-8.64)*	-0.84 (-7.78)*	-0.79 (-8.80)*	-0.84 (-11.19)*	-0.87 (-12.11)*
Yr2003	-0.31 (-4.52)*	-0.29 (-4.30)*	-0.32 (-4.88)*	-0.26 (-3.82)*	-0.29 (-4.09)*	-0.24 (-4.94)*	-0.29 (-5.36)*	-0.33 (-6.20)*
No of groups	114	129	127	126	129	130	128	128
Instruments	63	64	64	64	54	65	75	65
Wald stat	360.55 (0.000)	333.04 (0.000)	457.23 (0.000)	407.35 (0.000)	449.73 (0.000)	568.20 (0.000)	601.15 (0.000)	659.52 (0.000)
Hansen Diff	16.19 (0.57)	15.74 (0.61)	24.27 (0.14)	14.89 (0.67)	15.84 (0.39)	17.50 (0.49)	24.50 (0.26)	17.60 (0.48)
Observations	601	590	567	601	601	591	560	577

Note: *, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Appendix:

Table: List of Countries

1	Albania	41	Ethiopia	81	Mali	121	Sri Lanka
2	Algeria	42	Finland	82	Malta	122	Sudan
3	Angola	43	France	83	Mexico	123	Suriname
4	Argentina	44	Gabon	84	Moldova	124	Sweden
5	Armenia	45	Gambia	85	Mongolia	125	Switzerland
6	Australia	46	Germany	86	Morocco	126	Syria
7	Austria	47	Ghana	87	Mozambique	127	Taiwan
8	Azerbaijan	48	Greece	88	Myanmar	128	Tanzania
9	Bahamas	49	Guatemala	89	Namibia	129	Thailand
10	Bahrain	50	Guinea	90	Netherlands	130	Togo
11	Bangladesh	51	Guinea-Bissau	91	New Caledonia	131	Trinidad & Tobago
12	Belarus	52	Guyana	92	New Zealand	132	Tunisia
13	Belgium	53	Haiti	93	Nicaragua	133	Turkey
14	Bolivia	54	Honduras	94	Niger	134	UAE
15	Botswana	55	Hong Kong	95	Nigeria	135	Uganda
16	Brazil	56	Hungary	96	Norway	136	Ukraine
17	Brunei	57	Iceland	97	Oman	137	United Kingdom
18	Bulgaria	58	India	98	Pakistan	138	United States
19	Burkina Faso	59	Indonesia	99	Panama	139	Uruguay
20	Cameroon	60	Iran	100	Papua N Guinea	140	USSR
21	Canada	61	Iraq	101	Paraguay	141	Venezuela
22	Chile	62	Ireland	102	Peru	142	Vietnam
23	China	63	Israel	103	Philippines	143	West Germany
24	Colombia	64	Italy	104	Poland	144	Yemen
25	Congo	65	Jamaica	105	Portugal	145	Zambia
26	Congo, DR	66	Japan	106	Qatar	146	Zimbabwe
27	Costa Rica	67	Jordan	107	Romania		
28	Cote d'Ivoire	68	Kazakstan	108	Russia		
29	Croatia	69	Kenya	109	Saudi Arabia		
30	Cuba	70	Korea, DPR	110	Senegal		
31	Cyprus	71	Kuwait	111	Serbia		
32	Czech Republic	72	Latvia	112	Serbia & Monten		
33	Czechoslovakia	73	Lebanon	113	Sierra Leone		
34	Denmark	74	Liberia	114	Singapore		
35	Dominican Rep	75	Libya	115	Slovakia		
36	East Germany	76	Lithuania	116	Slovenia		
37	Ecuador	77	Luxembourg	117	Somalia		
38	Egypt	78	Madagascar	118	South Africa		
39	El Salvador	79	Malawi	119	South Korea		
40	Estonia	80	Malaysia	120	Spain		

4. Corruption and Financial Intermediation in a Panel of Regions: Cross-Border Effects of Corruption

4.1. Introduction

> Corruption is worse than prostitution. The latter might endanger the morals of an individual, the former invariably endangers the morale of the entire country- Karl Krauss

In recent years, the wide spread prevalence of corruption across nations, particularly in developing countries, has attracted the attention of economists and policy makers. Understanding the significant effects of corruption on a country's development process has motivated researchers to investigate why corruption exists and what determines its high degree of variation across countries. A number of empirical studies have recently identified a large set of causes of corruption such as economic, cultural, political and institutional aspects (see, for example, Treisman, 2000; Serra, 2006; Majeed and MacDonald, 2010). However, some of the channels of corruption still remain to be fully explored, such as the role of market imperfections for rent seeking and corrupt activities.

For example, a lack of competition, in product and financial markets, fosters corruption because rent seeking activities increase in the absence of competition and such rent seeking activities are closely associated with corruption levels. Theoretical studies predict an ambiguous effects of competition on corruption. On the one hand, lack of competition generates rents (supra normal profits) for entrepreneurs, thereby motivating bureaucrats to ask for bribery (Foellmi and Oechslin (2007). On the other hand, the presence of these rents increases the values of monitoring the bureaucracy in a society (Ades and Di Tella (1999).

This study focuses on the lack of competition in financial markets where lower levels of financial intermediation are taken to indicate underdeveloped financial systems. Foellmi and Oechslin (2007) argue that less developed financial systems strengthen economic elites and these economic elites can substantially oppose/hinder anti-corruption reforms if political power is concentrated in their hands. Boerner and Hainz (2009) predict an ambiguous relationship between financial sector reforms and corruption. Their results are conditional on the political weights of different groups and according to their model, financial sector reforms

can lower corruption only if the political influence of relatives (other groups) dominates over the political influence of corrupt officials.

The motivation for testing the impact of financial intermediation on corruption is three fold. First, theoretical studies predict a relationship between financial reforms and corruption but to the best of our knowledge this relationship has not been tested. Second, theoretical studies predict ambiguous effects of financial reforms on corruption and this can only be clarified in an empirical setting. Third, theoretical studies indicate the importance of a threshold in shaping the link between corruption and financial reforms and again this can only be clarified in an empirical context.

The existing literature on the causes of corruption explicitly or implicitly assumes that corruption is determined by country specific factors; in other words, corruption is independent of corruption in neighboring countries. However, in practice, neighboring countries share common political cultures and adopt similar institutions. These common political cultures are very close to corruption (see, for example, Hillman and Swank, 2000). In this study, we explicitly control for cross-country interdependence of corruption using a spatially weighted matrix.

The motivation for spatial analysis of corruption is two fold. First, cultural reasons of corruption are closely related to cross country interdependence of corruption, as norms about corruption tolerance are more likely to spread to neighboring countries as compared to distant countries. Such interdependence of corruption implies that corruption levels may vary less within a region because of similar cultural reasons (for example, Paldam (2002) points out that corruption is mainly supported by cultural factors). Second, Becker et al. (2009) provide empirical evidence of cross country interdependence of corruption.

In sum, this study has a number of unique and novel elements compared to extant work in this area. First, we believe that this is the first study that tests empirically the relationship between the financial intermediation and corruption. Second, this is also the first study to test for the presence of a threshold in shaping the link between corruption and financial development. Third, our study introduces the concept of regional panels in addition to cross sectional or cross country panels. Fourth, we introduce the concept of alternative lag lengths to trace out

the repercussion effects of policy reforms in neighboring countries. Fifth, we model the role of spatially weighted corruption that takes account of the common political, cultural and regional factors and, sixth, we use a variety of econometric techniques to account for time dynamics and to control for the possible problem of endogeneity.

This paper, specifically, adds to this emerging literature on corruption by addressing the following questions: (1) Does high financial intermediation reduce corruption?; (2) Is the relationship between high financial intermediation and corruption perhaps non-monotonic?; (3) Does spatial corruption matter in shaping the link? (4) Do past levels of corruption in neighboring countries matter for current corruption in home countries? (5) Do regional panels make difference in shaping the link?

The remainder of the paper is structured as follows. Section 2 provides a review of the relevant literature and Section 3 provides a discussion of the data. In Section 4 we present our modeling framework and our estimation methods, while in Section 5 our empirical findings are presented. Section 6 is our concluding section.

4.2. Literature Review

In the first part of this section we briefly review the relevant theoretical literature on the relationship between financial reforms and corruption, while in the second part we review empirical studies on contagion and corruption and then summarize our discussion in a flow chart.

4.2.1. Review of theoretical studies on financial markets and corruption

Mckinnon (1973) argues that the development of a capital market is “necessary and sufficient” to foster the “adoption of best-practice technologies and learning by doing.” In other words, limited access to credit markets restricts entrepreneurial development, thereby leaving more space for rent seeking and corrupt activities. In this study we extend this view and argue that the absence of well functioning local financial markets can limit the availability of funds through formal recourses and incite an individual to seek other viable options for finance, from, say, the informal economy where the margin for bribes and rent seeking activities is likely to be significant.

Ades and Di Tella (1999), provide further insights into the corruption-rent seeking mechanism. They present evidence that the level of rents in general, and market structure in particular, determine the intensity of corruption in an economy. They argue that variation in rent size, as a result of changes in competition, causes ambiguous effects on corruption: on the one hand, lower levels of competition provide opportunities to bureaucrats to extract more rents from the firms they control, while on the other hand, this situation also implies that it is more valuable for a society to avoid corruption and increase the accountability and monitoring of its bureaucracy. Thus, theoretically, the net impact of competition on corruption is ambiguous.

Recently, Foellmi and Oechslin (2007) focus on the lack of competition in financial markets in shaping the theoretical relationship between rent and corruption. They build a general equilibrium model with credit market imperfections and heterogeneous agents to explain the causes and consequences of non-collusive corruption[26]. The model features two types of individuals: potential entrepreneurs and the officials and where the potential entrepreneurs are heterogeneous in terms of ex ante wealth, while officials do not have any ex ante wealth endowment. This model predicts that credit market imperfections generate rents for the incumbent entrepreneur and the availability of these rents leaves the margin for an official with discretionary power to ask for a bribe because he knows that the alternative viable investment options to the incumbent yield much lower returns. If sanctions against bribes are also imperfect then the rents may be partially extracted by corrupt officials. However, in the case of a well developed financial system (i.e. countries with (nearly) perfect markets) returns inequalities across investment projects are eroded and there is a disincentive for the incumbent to consider a bribe and therefore, a corrupt official will not seek bribes in such a situation, even though the probability of being detected and punished is low. Foellmi and Oechslin predict that financially developed economies tend to be less corrupt because rents are lower in these economies.

Foellmi and Oechslin (2007) also derive the income distributional consequences from their model and predict that non-collusive corruption redistributes income from the entrepreneur (non officials) towards corrupt officials and also income is redistributed within the entrepreneurial group. The middle class losses (suffers) from more corruption while the

[26] Non-collusive corruption means additional cost on private business activity.

wealthy entrepreneurs are less affected or they even win. Paying bribes adversely affects the size of collateral and thus borrowing decreases and the individuals who lack collateral and rely on borrowing to finance investment projects of minimal size suffer, specifically when credit restrictions are more severe. Some of the members of the middle class will not consider becoming an entrepreneur as a viable option and may quit the market causing a decline in aggregate demand for capital, thereby decreasing the cost of capital. Larger borrowers benefit more from the lower cost of capital, because this benefit (i.e. the general equilibrium effect) is strong enough to outweigh the costs of bribes. The largest borrowers are more affluent because their ex ante wealth plays the role of collateral. Another implication of the crowding out effect is that it may reduce competition on the product market as well, thereby amplifying the distribution consequences among the entrepreneurs (non-officials). The distributional consequences of the model suggest that less developed financial systems (credit market imperfections) strengthen economic elites, thereby anti-corruption reforms can be substantially opposed/hindered if political power is concentrated in the hands of economic elites.

Foellmi and Oechslin (2007) further argue that improving financial market conditions does not necessarily imply that the level of corruption will decline. If contract enforcement starts improving from a low level then initially corruption may rise and after reaching a certain threshold level of the contract enforcement it will fall. This happens because improving enforcement initially softens the borrowing constraints for entrepreneurs since higher capital demand does not affect the interest rate as the supply of capital is perfectly elastic. Other things equal, therefore, corrupt officials face bribe margins from an entrepreneur and therefore ask for higher bribes. Thereafter, improving contract enforcement no longer creates new entrepreneurs since the borrowing constraints have already been softened and the better enforcement increases the interest rate. These two effects work in opposite directions offsetting each other and the amount of bribes remains unchanged. Thereafter, further improvements in contract enforcement reduce optimal bribes because now entrepreneurship is not a viable option and becoming a lender is more attractive. In this situation, individuals have an incentive to take advantage of investing opportunities with higher returns outside their own firms.

Recently, Boerner and Hainz (2009) also provide a theoretical link between financial reforms and persistent corruption using a probabilistic voting model. The basic proposition of their

model is that corrupt officials have to pay entry fees to get lucrative positions in the bureaucratic hierarchy. In the presence of imperfect credit market, the corrupt officials arrange part of their finances from the informal market using personal connections, such as relatives. In doing so, they in fact give a stake in corruption to their relatives. This unproductive investment is viable for the relatives because economic opportunities are scarce and it implies that the stake-holders (the creditors) are likely to oppose anti-corruption reforms because they finance corrupt incumbent officials in view of a share in prospective rents.

If credit market imperfections are lower and the financial sector is liberalized then all citizens have access to loans. In the presence of wider opportunities for loans, corrupt officials can finance their entry fee through financial market instead of relatives and in the presence of a developed financial system, support for anti-corruption policies is the likely outcome.

The analysis of Boerner and Hainz shows that economic and financial reforms generate investment opportunities in productive sectors. These opportunities play an important role in shaping the political preferences of agents that, in turn, support the fight against corruption. While in the absence of these reforms, and thus the absence of productive investment opportunities, the rational agents tend to invest in unproductive corrupt activities by financing entry fees. Consequently, both corrupt officials and their financers do not support socially beneficial political initiatives to abolish unproductive activities. Thus, the political success of anti-corruption policies depends on economic and financial liberalization. The Boerner and Hainz study predicts unambiguous results in the case of reforms of the real sector because these reforms promote entrepreneurship in productive sectors. However, in the case of reforms of the financial sector the study provides ambiguous results since the results are conditional on the political weights of different groups. If the political influence of relatives dominates over the political influence of corrupt officials then financial sector reforms unambiguously help to fight against corruption.

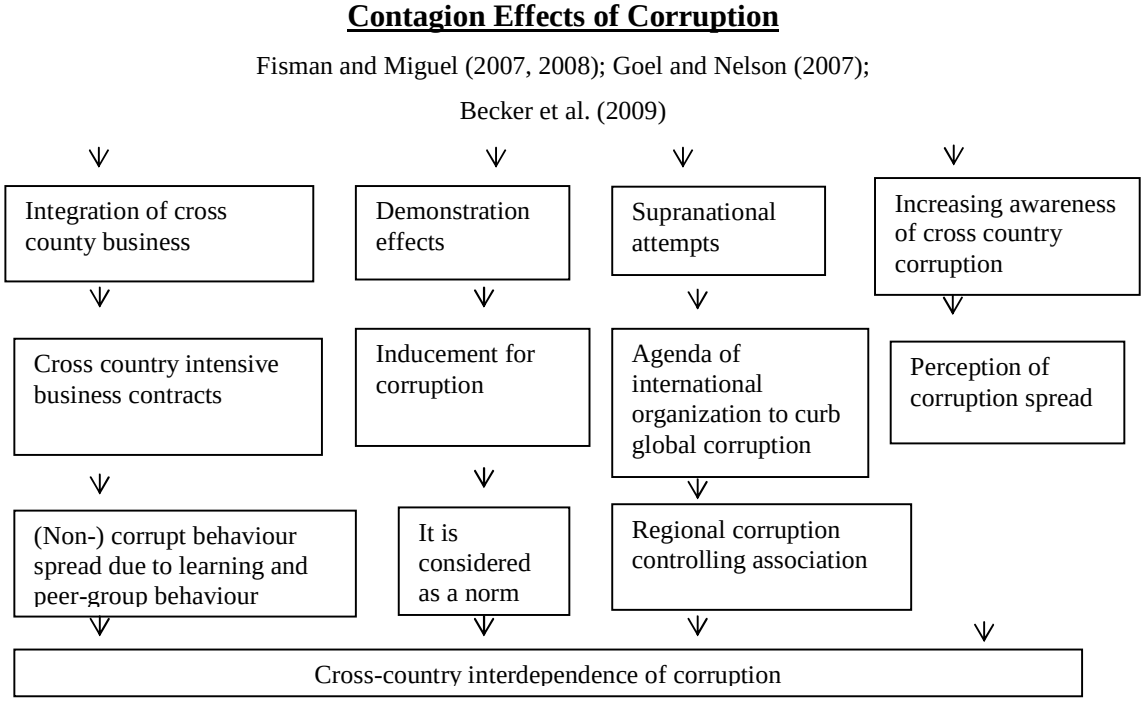
The ambiguous theoretical predictions of the link between financial sector reforms and corruption in the above studies, and the possible presence of a threshold level, can only be confirmed or rejected by an empirical test. That is what we attempt to do in this study.

4.2.2 Corruption and contagion

The existing literature on the causes of corruption is mainly based on the assumption that corruption is a country specific phenomenon and the prevalence of corruption in a country is independent of the prevalence of corruption in adjacent countries. However, some recent studies have pointed out that institutions in neighboring countries are similar and the similarity of these institutions breeds a similar pattern of political culture and this political culture is closely associated with levels of corruption (Becker et al (2009); Hillman and Swank, 2000)

In order to support the argument of so-called contagion corruption, a number of justifications are noted here. First, interdependence of cross country business has increased in recent years and norms about corruption are more likely to shift from one country to another due to learning and peer-group behaviour (see, for example, Fisman and Miguel, 2007, 2008). Second, corruption also spreads due to a demonstration effect; for example, existing levels of corruption in a country induce foreigners to get involved in corruption as well (see, for example, Goel and Nelson, 2007, for evidence of contagion corruption across US states). Third, recently curbing global corruption has been put on the agenda of international organizations such as the UNO, World Bank, IMF and WTO and they are now attempting to propagating corruption free societies. Fourth, corruption norms are spreading across borders because the awareness of individuals about corruption is increasing due to increased corruption surveys and its portrayal in the media. This can also propagate (non-) corrupt behaviour across countries. A flow chart, given below, summarizes the above discussion.

4.2.3 Description of channels through which corruption becomes contagion



4.3. Data Description

The International Country Risk Guide (ICRG) corruption index and corruption perception index (CPI) by Transparency International are both used in corruption studies. We prefer to use the ICRG, since most previous studies use it and the index covers a large number of countries and a long period of time. The ICRG also has a high correlation with other indices that have been used in the literature, such as the Transparency International and Business International (see Treisman, 2000; Majeed and Macdonald (2010) for more details) indices[27]. We also use alternative corruption indices as a robustness check. The other variables used in this study are reported in Table 1. We average the data over a 5-year non-overlapping period, 1984-2007. In this way we have five observations, in most instances, for all of the countries in our sample. The 5 year average periods are: 1984-88, 1989-93, 1994-98, 1999-03, 2004-07.

[27] Recently, Majeed and Macdonald (2010) show a correlation between these alternative corruption indices over the period 1996-2007. They show that the correlation between ICRG and TI corruption indices is 0.87, while the correlation between ICRG and World Bank (WB)'s corruption indices is 0.88. Finally, their study shows a very high correlation, 0.98, between TI and WB. These high correlations indicate that these alternative corruption indices are consistent, even though they are based on a subjective rating.

We introduce the concept of regional panels in the following way. We calculate the average of a variable of interest for all countries in a specific region, such as East Asia and Pacific (EAP), for a specific year, such as the initial year of data, 1984. In this way we average all of the variables for all regions. In order to account for time dynamics within a region, we repeat our averaging exercise for each year until 2007. We have nine regions in total: East Asia & Pacific, Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa, South Asia, Sub-Saharan Africa, Europe, Australia-Oceania, and North America. To the best of our knowledge this is the first study using panel data that introduces an entirely different method of data analysis. This innovative exercise of regional panels has several advantages. First, it serves as a robustness check. Second, it does not assume that cross country corruption (within a region) is independent. Third, it takes account of the time element in the data. Fourth, cultural, political and institutional similarities within a region are better captured by using regional panels.

4.4. Model

The theoretical formation of a model for this study relies on Becker (1968)'s seminal work where individuals make rational choices by giving weights to relative costs and benefits of an illegal (corrupt) activity. These costs and benefits depend on exogenous factors that, in turn, depend on the role of market structure and the socio-cultural environment. The socio-cultural environment is developed by historical, legal, political, regional and country-specific factors. This study takes into account all of these factors for an empirical analysis. The specified standard corruption equation is given as follows:

$$C_{it} = \alpha_{it} + \beta_1 PCY_{it} + \beta_2 FI_{it} + \beta_3 X_{it} + \mu_{it} + \nu_t + \varepsilon_{it}, \qquad (1)$$

where (i= 1… N; t=1… T), C_{it} is a perceived corruption index, PCY_{it} is per capita income to measure the level of economic development, FI_{it} represents the degree of financial intermediation, X_{it} represents a set of control variables based on the existing corruption literature, u_i is a country specific unobservable effect, v_t is a time specific factor and ε_{it} is an i.i.d. disturbance term. The expected sign for the key parameter of interest, β_2, is negative.

In addition to the other terms contained in equation 1, equation 2 includes a non-linear term for financial intermediation (FI^2) to facilitate an assessment of the possible presence of a threshold level of financial intermediation. Now the expected sign for β_2 is positive while it is negative for β_3.

$$C_{it} = \alpha_{it} + \beta_1 PCY_{it} + \beta_2 FI_{it} + \beta_3 FI^2{}_{it} + \beta_4 X_{it} + \mu_{it} + \nu_t + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

Equation 3 includes another key determinant of corruption, the military in politics (MP), that has recently been introduced by Majeed and MacDonald (2010). The authors suggest that the explanatory power of the military in politics is at least as important as the conventionally accepted causes of corruption, such as economic development. The expected sign of the parameter on MP, β_4, is negative.

$$C_{it} = \alpha_{it} + \beta_1 PCY_{it} + \beta_2 FI_{it} + \beta_3 FI^2{}_{it} + \beta_4 MP_{it} + \beta_5 X_{it} + \mu_{it} + \nu_t + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

In a very recent paper Becker et al. (2009) estimate cross country interdependence of corruption as a key variable of concern for 123 economies and provide significant evidence of contagious corruption. Our study evaluates financial liberalization and the contagion nature of corruption by using standard corruption equations and following an econometric model set out in Becker at el. (2009). While taking account of the contagion nature of corruption we differ from Becker at el. (2009) by considering alternative lag lengths of contagious corruption. We introduce 5, 10, 15 and 20 year lags in order to assess the lag nature of spatial corruption so that policy makers can effectively devise anti-corruption polices by taking account of beggar thy neighbor polices affecting the optimality of domestic policy initiatives. Becker et al. (2009) use conventional control variables of corruption while we use new measures of corruption, such as the military in politics. In addition, we also consider contagious corruption as a robustness check for our main variable of concern, financial intermediation.

Controlling for cross-country interdependence requires a suitable econometric model. One class of models that supports such interdependence is a spatial econometric model. The term has its origins in geographical statistics which in the past was the main application for such methods. However, in recent years, economists have discovered potential merits of such methods to analyze interdependence brought about by general equilibrium effects. Put differently, spatial econometrics involves the development of methods and statistical tools for the analysis of spatial interactions (spatial auto correlation), learning effects, externalities, spillovers and spatial structure (especially heterogeneity).

The key difference between spatial econometrics and traditional econometrics is that the former addresses a locational component. Two issues arise from such a component: the first is the existence of spatial dependence between observations and the second is the occurrence of spatial heterogeneity in the relationship. Traditional econometrics largely ignores such issues but they violate the traditional Gauss-Markov assumptions used in regression modeling. For example, one assumption in the Gauss-Markov framework is that the explanatory variables remain fixed in repeated sampling but spatial dependence violates this assumption, as does the assumption that a single line relationship exists across the sample data observations (Lesage, 1998).

In order to analyze the notion of interdependence across countries, spatial econometric models need an assumption regarding the nature of the interdependence. In applied research, researchers normally assume that interdependence is associated with space and geography and that interdependence is positively related to adjacency and negatively related to distance. Although there are many ways to model adjacency interdependence econometrically, here we consider two forms (following Becker et al., 2009), and these are spatial lags and spatially autoregressive residuals. The exclusion of significant spatial dependence in the residuals produces inefficient parameter estimates. Similarly the exclusion of related spatial lags yields inconsistent parameter estimates. In the context of our analysis, taking account of spatial lags implies that corruption in some country i depends on the corruption in j countries. Put differently, the level of corruption in country i is an adjacency (or inverse-distance-related) function of corruption in other countries. Similarly, another implication in our context is that the disturbance term of country i depends on the disturbance terms of other economies. In other words, country i's disturbance term is an adjacency (or inverse-distance-related) function of other countries, disturbances. The model can be specified as follows:

$$c_i = \alpha + \lambda \sum_{j=1}^{N} w_{ij} c_j + X_i \beta + \mu_i ; \mu = p \sum_{j=1}^{N} w_{ij} \mu_j \quad \text{,.....} \quad (4)$$

where c_i stands for corruption in country i, and w_{ij} is an adjacency-related weight. The w_{ij} has two properties that are, $\sum_{j=1}^{N} w_{ij} = 1$ and $w_{ii} = 0$,[28] and x_i is a $1\times K$ vector of covariates. The greek letters α, λ, and β refer to unknown parameters that require to be estimated. α is an intercept while β is a $K \times 1$ parameter vector for the covariates collected in x_i. Two parameter, λ and ρ, measure the intensity (strength) of interdependence, where λ denotes the spatial lag and ρ represents the spatial correlation in the residuals. In our analysis, we focus mainly on the spatial lag parameter λ since interdependence in terms of observable characteristics appears of more concern to economists and policy makers than interdependence in the disturbances. Finally, μ_i is the overall (spatially correlated) disturbance term and v_i is the remaining disturbance term which is independently (but not necessarily identically) distributed across all countries i.

4.5. Results and Interpretation

Table 4-1 provides our base line results for the effect of financial liberalization on corruption for a cross section of 120 economies. All columns of the table indicate that the impact of high financial intermediation (FI) on corruption is negative and significant. The estimated coefficient on financial Intermediation is remarkably robust and its size remains 0.001 in all the regressions. This finding implies that a one standard deviation increase in FI is associated with a decrease in corruption of 0.20 points, or 16 percent of a standard deviation in the corruption index. All other variables in the regressions turn out to be significant with the expected signs and the overall fit of the model is good.

The effect of economic development is consistently negative and significant in all regressions in this table, and in subsequent tables, which implies that countries at the bottom of the ladder of economic development tend to be more corrupt. This happens because poor countries generate minimal wealth effects for average citizens and lower incomes create structural incentives for corrupt behaviour. Conversely, countries at the upper end of the ladder of economic development tend to be less corrupt because the discount rates (differential levels of

[28] For adjacency weights, we develop a country-by-country matrix using unitary values for countries share common land borders and zero otherwise. According to this rule islands do not have neighbors and also country-pairs with a common border that is not on land do not have a border, accordingly. The normalization divides all unitary entries by the sum of all neighbors for each country (Becker et al., 2009).

impatience across economic agents) of potential bribe takers and givers are lower in rich nations, thereby making them less eager to jump the queue via illegal ways. In addition, opportunity cost of punishment is also higher for wealthy individuals. Economic freedom and rule of law are negatively and significantly associated with corruption levels. A greater degree of economic freedom and a strong hold of law discourage corruption prone activities because economic freedom promotes productive business activities and similarly a strong rule of law discourages bureaucrats to ask for bribes. Furthermore, greater economic freedom implies a free flow of market forces and lesser government controls thereby less opportunities for rent seeking by government officials.

Table 4-2 replicates the results of Table 4-1 using alternative corruption indices and, again, the estimated coefficients for FI are significant in all columns and of the expected signs. This means the relationship between financial intermediation and corruption levels is negative, irrespective of which corruption index is being used for estimation. Columns 2-5 show parameter estimates using the Transparency International corruption index, while column 6-8 represents parameter estimates drawn using World Bank corruption index. Parameter estimates for other control variables are similar to the results of Table 4-1.

Table 4-3 replicates the benchmark findings using additional control variables and the benchmark findings turn out to be consistent to the addition of these control variables. The coefficient on FI remains robustly negative and significant at -0.001. Among the additional control variables - democracy, military in politics and military spending – all are significant with the correct signs. This analysis shows that democracy turns out to be most significant additional control variable, followed by military related variables. We believe that it is now widely accepted that corruption is rooted in various forms of political deficiencies. An established democracy promotes political competition, transparency and accountability (to the voter), thereby reducing corruption. To address this we can either control for military expenditures or for the role of the military in politics and both turn out to be negative and significant, and this finding is consistent with Majeed and MacDonald, 2010. The involvement of military in politics engenders corruption because military is not elected by any one and accountability of the military elites is limited (see for further details Majeed and MacDonald, 2010).

Table 4-4 replicates the findings of Table 4-1 while controlling for regional dummies. The coefficient on FI, 0.001, remains robustly negative and the level of significance slightly improves. The last column of the table indicates that all of the regional dummies are positive and significant, implying that regional factors are important in explaining corruption.

Table 4-5 provides the results for the benchmark model using a panel of nine regions: East Asia & Pacific, Europe & Central Asia, Lat America & Caribbean, Middle East & North Africa, South Asia, Sub-Saharan Africa, Europe, Australia-Oceania, and North America. In absolute terms, the estimated coefficient on FI improves from 0.001 to 0.002 and the level of significance also improves as well. This finding implies that a one standard deviation increase in FI is associated with a decrease in corruption of 0.40 points.

Table 4-6 replicates the results of Table 4-5, using alternative econometric techniques and controlling for the issue of endogeneity. The estimated coefficients for FI are again significant in all columns and of the expected signs. In this study we develop regional panels that differ in two ways from cross country panels. First, each region comprises an annual observation to take account of time dynamics. Second, countries within a region share borders that capture the contagious nature of corruption (meaning that cross country corruption is not independent). Following the theory of contagion effects of corruption, the identification of a country is not of such importance as the identity of a region and the time element. It is noteworthy that the quality of the results improves in a regional panel in terms of the level of significance, the size of coefficients and direction of effects compared to all other ways of data analysis.

Table 4-7 contains estimates of the benchmark model using a panel of 146 economies. This shows that our benchmark findings are robust and the size of the estimated coefficient on FI is 0.0004 implying that a one standard deviation increase in FI reduces corruption by 0.08 points. Findings for other control variables remain unaffected and the overall results seem to improve in a panel setting. The effect of government spending is significant with negative signs, implying that a larger government may spend more money to strengthen check and balances on corrupt activities.

Table 4-8 contains a sensitivity analysis for FI and corruption in a panel setting. Here we employ eleven additional control variables and find that FI is robustly significant in explaining corruption: the coefficient on FI fluctuates between 0.0004 and 0.0005 in all of the regressions. In the table the most significant additional control variables turn out to be inflation, openness, democracy and the military in politics. The effect of inflation is positive because inflation is an indicator of macroeconomic instability. Our results here are consistent with Paldam, 2002; Majeed and MacDonald, 2010.

Table 4-9 contains further results for the benchmark model using a panel of 146 countries with additional control variables. The results indicate that investment profile is the most significant factor in this sensitivity analysis. We also control for time dummies and our results remain robust. In sum, we infer two points from the results displayed in Table 4-8 and Table 4-9: (1) our benchmark finding remains robust; (2) the parameter estimates drawn from additional control variables are similar to the prediction of the existing literature on the causes of corruption.

In Table 4-10 and Table 4-11 we re-estimate our benchmark model using a random effects estimator. Our main variable of interest, FI, is still significant with a negative sign, although the size of coefficient drops slightly. Our main control variables - economic development, economic freedom, rule of law and government spending - are the same in terms of the level of significance and direction of effect. In our sensitivity analysis we include thirteen additional control variables, other than four time dummies and six regional dummies. Among the additional control variables military in politics is consistently positive and significant in increasing corruption. All other control variables are robust in terms of signs; however, some of them decrease or increase in terms of the level of significance. For example, inflation drops in significance, while investment profile increases in significance.

Table 4-12 contains estimates of the benchmark model using a systems GMM estimator. Using this technique our results improve in terms of the level of significance and remain the same in terms of the direction of effect. The coefficient on FI is 0.0004 in all of the regression and this implies that a one standard deviation increase in FI reduces corruption by 0.08 points.

Table 4-13 reports results for a sub sample of developing counties and our benchmark findings turn out to be confirmed in this sample as well. The estimated coefficient on FI is consistently 0.001 in all columns of the table which implies that a one standard deviation increase in FI is associated with a decrease in corruption of 0.20 points, or 16 percent of a standard deviation in the corruption index.

We also test for the presence of a threshold in the relationship between FI and corruption for a cross section of 116 countries using alternative corruption indices. The parameter estimates for FI and FI^2 indicate the presence of a threshold (Table 4-14). This implies that high financial intermediation is beneficial only up to a threshold level and after the threshold is reached corruption increases. This finding contradicts that of Foellmi and Oechslin (2007) who predict the opposite, that initially high financial liberalization increases corruption and after a certain threshold level is reached it decreases corruption. There argument is that at an initial phase of financial liberalization interest rate remains the same due to an elastic supply of capital and this leaves a margin for bribe paying. However, over time the interest rate rises and the margin for bribe paying vanishes.

The following arguments can help in understanding the empirical finding of a U-shaped relationship between financial development and corruption. First, this might explain the fact that more competition (high financial development) reduces the value of accountability and monitoring of bureaucracy by the citizens as suggested by Ades and Di Tella (1999), thereby increasing corruption levels. Second, support for anti-corruption policies is likely to decrease, if political influence of corrupt bureaucrats dominates at higher levels of financial development as suggested by Boerner and Hainz (2009). Third, financial development may create opportunities for corruption in the absence of check and balances on excessive liberalising financial markets. For instance, in European economies a recent spike in corruption perceptions is partially blamed to excessive financial liberalisation. According to Euro barometer (2009), “What could be causing the overall increase in the perceptions about corruption that we have seen? Another factor that may be influencing opinion is the continuing economic impact of the global financial crisis.”

Ours is the first study that attempts to provide an empirical understanding of threshold in view of conflicting predictions of threshold theoretical studies. A comprehensive understanding of the threshold effects of financial reforms on corruption requires further theoretical and empirical work. One possible reason for this non-monotonic relationship between FI and corruption could be that financial reforms with out regulation may become negative for the economy after a certain point.

Table 4-15 provides a set of results in which the most/least corrupt nations have been excluded. Specifically, in columns 3-4 we exclude the most clean countries, while in columns 5-6 we exclude the most corrupt nations. The results of Table 4-15 demonstrate that our benchmark findings remain consistent.

Finally, in Table 4-16 and Table 4-17 we provide a set of results that take account of the contagion effects of corruption. The purpose of incorporating contagion effects is threefold. First, to test whether spatial affects matter. Second, to check whether our bench-mark findings are consistent and, third, to test the lag length of contagion effects. Our results show that contagion effects persist and affect corruption levels significantly and our benchmark findings prove to be consistent and robust. The estimated coefficient on FI is consistently 0.001 in all the regressions. The estimated coefficient on the spatial index is about 0.2, which implies that a policy that reduces corruption by one standard deviation in the home country will reduce corruption by 0.114 in the neighboring country.

In order to assess the lag nature of the spatial corruption phenomenon, we introduce 5, 10 year, 15 year and 20 year lags of spatially weighted corruption, respectively. Although each lag length is significant in explaining corruption but we infer that the most effective lag length is 5 to 10 years because models with other lag lengths do not perform well as the level of economic development becomes insignificant. First column of the table shows that estimated coefficient on contagion effects is 0.21 which implies that a policy in neighboring country that reduces corruption one standard deviation in past five to ten years will reduce corruption in the home country by 0.12 points.

4.6. Conclusion

In recent years, international organizations such as the World Bank, the IMF and the UNO have set the elimination of corruption as their prime goal. Additionally, regional organizations and domestic governments have advocated and devised anti corruption policies. According to the Global Corruption Barometer (2010) "corruption has increased over the last three years say six out of 10 people around the world, and one in four people report paying bribes in the last year"[29]. The literature has identified a large number of factors that cause corruption, such as economic, political, cultural and institutional aspects. Although some of the determinants of corruption are inconclusive, a consensus is slowly emerging on the key causes of corruption. For instance Serra (2006) identifies economic development, democracy, and political stability as important causes of corruption. Our study differs from existing studies on the causes of corruption by empirically analyzing the importance of financial market imperfections for cross country variations of corruption levels.

The importance of financial market liberalization in combating corruption has been highlighted in the theoretical literature but no one has tested this relationship in an empirical settings. This study contributes to the existing literature on the causes of corruption by introducing the linear and non-monotonic relationship of corruption and financial liberalization. By drawing on a large cross sectional, country panels and regional panel data sets over a long period of time (1984-2007), our analysis finds substantial support for a negative relationship between financial intermediation and corruption. The results imply that a one standard deviation increase in financial liberalization is associated with a decrease in corruption of 0.20 points, or 16 percent of a standard deviation in the corruption index. Our findings are consistent with respect to a number of robustness checks, including incorporating contagion effects alternative corruption indices and regional dynamics.

Finally, the existing literature on corruption assumes that the prevalence of corruption is determined by country specific factors. Nonetheless, some studies point to corruption as being interdependent across bordering countries and it is a common characteristic of low income countries. For example, Rowley (2000) argues that a common political culture in Africa caused corruption to be the norm in these countries. We also contribute to this part of the

[29] http://www.transparency.org/policy_research/surveys_indices/gcb/2010

literature by evaluating the different lag lengths of contagious corruption. Our results show that a policy in a neighboring country that reduces corruption by one standard deviation in the past five to ten years will reduce corruption in the home country by 0.12 points.

Table 4-1: Corruption and Financial Intermediation (FI): Cross Section (CS) Estimation

Variables	Dependent Variable: Corruption					
FI	-0.004	-0.001	-0.001	-0.001	-0.001	-0.001
	(-4.38)*	(-1.75)***	(-1.66)***	(-1.78)***	(-1.72)***	(-1.68)***
PCY		-0.000	-0.000	-0.000	-0.000	-0.000
		(-8.18)*	(-6.18)*	(-5.25)*	(-2.62)*	(-2.73)*
Economic			-0.23	-0.22	-0.19	-0.19
Freedom			(-5.33)*	(-5.41)*	(-4.58)*	(-4.55)*
Govt.				-0.025	-0.011	-
Spending				(-2.18)**	(-0.95)	
Rule of Law					-0.32	-0.35
					(-4.32)*	(-4.90)*
R	0.14	0.45	0.55	0.57	0.63	0.63
Adj. R	0.13	0.44	0.54	0.55	0.62	0.62
F	19.16	47.96	46.79	36.71	37.73	48.18
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	120	120	120	120	120	120

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-2: Corruption and FI: CS Estimation: Alternative Corruption Indices

Variables	Dependent Variable: Corruption Index by Transparency International (TI)				Dependent Variable: Corruption Index by World Bank (WB)		
FI	-0.02	-0.004	-0.004	-0.002	-0.01	-0.002	-0.001
	(-9.47)*	(-2.49)*	(-2.45)*	(-1.62)***	(-9.53)*	(-2.69)*	(-1.72)*
PCY		-0.000	-0.000	-0.000		-0.000	-0.000
		(-10.55)*	(-9.86)*	(-8.22)*		(-9.70)*	(-7.15)*
Economic		-0.3	-0.27	-0.28		-0.18	-0.18
Freedom		(-4.88)*	(-2.38)*	(-4.87)*		(-6.64)*	(-7.18)*
Govt.			-.05	-.02			-.01
Spending			(-2.62)*	(-1.18)			(-1.09)
Rule of Law				-0.4			-0.21
				(-4.22)*			(-5.03)*
R	0.44	0.78	0.79	0.82	0.43	0.78	0.83
F	89.66	129.12	100.47	96.44	90.91	134.55	108.09
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	118	115	113	113	121	118	116

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-3: Corruption and FI: CS Estimation: Sensitivity Analysis

Variables	Dependent Variable: Corruption						
FI	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(1.72)***	(-1.57)***	(-1.73)***	(-1.73)***	(-1.77)***	(-1.87)***	(-1.6)***
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-2.62)*	(-3.09)*	(-2.66)*	(-2.72)*	(-3.36)*	(-3.21)*	(-4.62)*
Economic	-0.19	-0.18	-0.18	-0.18	-	-	-
Freedom	(-4.58)*	(-4.39)*	(-4.49)*	(-4.50)*			
Rule of Law	-0.32	-0.31	-0.36	-0.34	-0.29	-0.32	-0.37
	(-4.32)*	(-4.39)	(-4.95)*	(-4.90)*	(-4.22)*	(-3.56)*	(-5.20)*
Govt.	-0.011						
Spending	(-0.95)*						
Inflation		0.0004					
		(1.19)					
Trade			0.001				
Openness			(0.83)				
Urbanization				0.000			
				(0.42)			
Democracy					-0.28		
					(-5.61)*		
Military in						0.117	
Politics						(1.95)**	
Military							0.05
Expenditures							(2.03)**
R	0.14	0.65	0.63	0.63	0.66	0.58	0.62
Adj. R	0.13	0.63	0.61	0.61	0.65	0.57	0.61
F	19.16	40.67	38.58	38.58	56.27	40.21	43.96
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	120	120	120	120	120	120	120

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-4: Corruption and FI: CS Estimation: Regional effects

Variables	Dependent Variable: Corruption						
FI	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-2.99)*	(-2.21)*	(-1.96)**	(-2.46)*	(-2.41)*	(-2.32)*	(-2.16)*
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-2.13)*	(-1.47)	(-1.49)	(-1.73)***	(-1.73)***	(-1.61)***	(-1.5)
Economic Freedom	-0.18	-0.18	-0.21	-0.18	-0.18	-0.17	-0.18
	(-4.41)*	(-4.49)*	(-4.41)*	(-3.69)*	(-3.71)*	(-3.20)*	(-3.54)*
Rule of Law	-0.35	-0.42	-0.38	-0.40	-0.40	-0.37	-0.37
	(-4.56)*	(-5.84)*	(-4.60)*	(-4.69)*	(-4.57)*	(-4.31)*	(-4.32)*
East Asia & Pacific	0.024	0.01	0.12	0.20	0.21	0.35	0.69
	(0.13)	(0.55)	(0.63)	(1.07)	(1.10)	(1.30)	(2.41)*
Europe & Central Asia		0.62	0.65	0.70	0.72	0.86	1.17
		(3.21)*	(3.25)*	(3.51)*	(3.52)*	(2.97)*	(4.32)*
Lat America & Caribbean			0.24	0.23	0.25	0.41	0.78
			(1.25)	(1.23)	(1.30)	(1.49)	(2.56)*
Middle East & North Africa				0.28	0.28	0.44	0.76
				(1.52)	(1.55)	(1.62)***	(2.80)*
South Asia					0.13	0.32	0.68
					(0.40)	(0.80)	(1.64)***
Sub-Saharan Africa						0.22	0.56
						(0.80)	(2.02)*
Europe							0.51
							(1.94)**
R	0.63	0.66	0.67	0.67	0.67	0.67	0.68
F	34.52	34.28	30.61	27.68	24.69	22.45	19.83
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	118	118	118	118	118	118	118

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-5: Corruption and FI: Regional Panel Estimation

Variables	Dependent Variable: Corruption							
FI	-0.004	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
	(-9.92)*	(-3.71)*	(-7.15)*	(-7.16)*	(-7.00)*	(-6.77)*	(-6.70)*	(-7.31)*
PCY		-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
		(-4.22)*	(-3.40)*	(-2.72)*	(-3.51)*	(-6.79)*	(-2.35)*	(-3.77)*
Govt.		-.04	-.05	-.04	-.03	-.04	-.05	-.05
Spending		(-3.13)*	(-4.97)*	(-3.57)*	(-3.5)*	(-3.97)*	(-5.59)*	(-5.28)*
Rule of Law		0.4	-0.44	-0.27	-0.63	-0.49	-0.35	-0.3
		(7.15)*	(-10.12)*	(-4.97)*	(-15.25)*	(-12.53)*	(-6.90)*	(-3.30)*
Trade			0.01	0.01	0.01	0.01	0.01	0.02
Openness			(12.29)*	(11.43)*	(10.01)*	(10.49)*	(8.89)*	(11.29)*
Military in				0.26				
Politics				(4.67)*				
Govt.					0.17			
Stability					(9.64)*			
Investment						0.115		
Profile						(7.72)*		
Democracy							0.17	
							(3.56)*	
Internal								-0.08
conflict								(1.7)***
R	0.32	0.75	0.86	0.87	0.90	0.89	0.86	0.86
F	98.40	159.96	249.58	232.28	314.99	276.19	221.70	210.43
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	216	215	215	215	215	215	215	215

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-6: Corruption and FI: Regional Panel: Alternative Econometrics Techniques

Variables	Dependent Variable: Corruption							
	2SLS				LIML		GMM	
FI	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
	(-6.93)*	(-7.00)*	(-6.42)*	(-6.31)*	(-6.42)*	(-6.31)*	(-10.63)*	(-11.74)*
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-3.55)**	(-2.90)*	(-2.50)*	(-6.72)*	(-2.50)*	(-6.71)*	(-2.22)**	(-6.81)*
Govt.	-.05	-.03	-.06	-.03	-.06	-.03	-.06	-.03
Spending	(-4.31)*	(-2.81)*	(-5.03)*	(-3.04)*	(-5.03)*	(-3.03)*	(-5.71)*	(-3.32)*
Rule of Law	-0.39	-0.20	-0.28	-0.46	-0.28	-0.46	-0.28	-0.46
	(-7.67)*	(-3.31)*	(-4.91)*	(-10.6)*	(-4.89)*	(-10.6)*	(-5.60)*	(-12.80)*
Open	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(12.00)*	(11.22)*	(8.32)*	(9.65)*	(8.32)*	(9.65)*	(7.72)*	(9.33)*
Military in Politics		0.29 (4.87)*						
Democracy			-0.19 (-3.82)*		-0.20 (-3.83)*		-0.20 (-3.41)*	
Investment Profile				0.15 (7.37)*		0.15 (7.35)*		0.15 (6.32)*
R	0.84	0.86	0.86	0.88	0.86	0.89	0.86	0.89
Wald	1079.88	1238.24	1164.03	1534.0	1163.58	1533.53	2037.60	1915.26
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sargan	3.49	3.08	2.62	2.61	2.66	2.65		
	(.06)	(.08)	(0.11)	(0.11)	(0.10)	(0.10)		
Basmann	3.42	2.00	2.55	2.54	2.56	2.55		
	(.06)	(.08)	(0.11)	(0.11)	(0.11)	(0.11)		
Hansen							3.53	1.67
							(0.06)	(0.20)
Observations	197	197	197	197	197	197	197	197

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-7: Corruption and FI: Panel Estimation

Variables	Dependent Variable: Corruption				
FI	-0.001	-0.0004	-0.0004	-0.0005	-0.0004
	(-4.23)*	(-1.68)***	(-2.08)**	(-2.22)**	(-1.94)***
PCY		-0.000	-0.000	-0.000	-0.000
		(-14.77)*	(-10.64)*	(-9.19)*	(-4.69)*
Economic			-0.20	-0.19	-0.17
Freedom			(-7.79)*	(-7.53)*	(-6.72)*
Govt.				-0.033	-0.02
Spending				(-4.29)*	(-3.20)*
Rule of Law					-0.29
					(-7.69)*
R	0.03	0.32	0.38	0.40	0.46
Adj. R	0.01	0.31	0.37	0.39	0.45
F	17.90	121.25	107.79	84.02	86.71
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	545	534	529	515	515

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-8: Corruption and FI: Panel Estimation: Sensitivity Analysis (I)

Variables	Dependent Variable: Corruption							
FI	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0003	-0.0005	-0.0005
	(-2.42)*	(-2.35)*	(-2.05)*	(-2.34)*	(-2.41)*	(-2.04)*	(-2.52)*	(-2.39)*
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-1.62)***	(-2.84)*	(-2.69)*	(-1.81)**	(-2.86)**	(-5.24)**	(-3.34)*	(-2.31)*
Economic	-0.19	-0.19	-0.12	-0.17	-0.19	-0.11	-0.18	-0.20
Freedom	(-8..02)*	(-8.28)*	(-2.93)*	(-6.49)*	(-8.19)*	(-3.89)*	(-7.73)*	(-8.14)*
Rule of Law	-0.34	-0.36	-0.33	-0.32	-0.37	-0.29	-0.36	-0.37
	(-9.13)*	(-10.03)*	(-8.71)*	(-8.09)*	(-9.70)*	(-7.51)*	(-9.63)*	(-9.89)*
Govt.	-0.025							
Spending	(-3.51)*							
Trade		0.003						
Openness		(3.68)*						
Democracy			-0.144					
			(-3.19)*					
Military in Politics				0.08				
				(2.41)*				
Education					0.004			
					(2.27)*			
Remittances						0.018		
						(2.14)**		
Inflation							0.002	
							(4.87)*	
Urbanization								0.000
								(1.16)
R	0.45	0.46	0.46	0.46	0.45	0.49	0.50	0.45
Adj. R	0.42	0.45	0.45	0.45	0.44	0.48	0.49	0.44
F	82.16	85.66	86.52	84.93	77.51	81.52	96.46	83.32
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	545	510	510	519	489	439	495	519

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-9: Corruption and FI: Panel Estimation: Sensitivity Analysis (II)

Variables	Dependent Variable: Corruption							
FI	-0.0004	-0.0004	-0.0004	-0.0004	-0.0005	-0.0005	-0.0005	-0.0004
	(-2.42)*	(-2.09)*	(-1.94)**	(-1.98)**	(-2.40)*	(-2.31)*	(-2.33)*	(-2.17)*
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-1.62)***	(-2.67)*	(-2.29)*	(-2.21)*	(-4.47)*	(-2.54)*	(-2.37)*	(-2.93)*
Economic	-0.19	-0.18	-0.22	-0.21	-0.24	-0.18	-0.20	-0.21
Freedom	(-8.02)*	(-7.70)*	(-8.88)*	(-8.45)*	(-10.35)*	(-7.04)*	(-8.17)*	(-10.26)*
Rule of Law	-0.34	-0.46	-0.47	-0.39	-0.43	-0.35	-0.37	-0.42
	(-9.13)*	(-11.78)*	(-9.89)*	(-9.94)*	(-11.84)*	(-9.26)*	(-9.12)*	(-12.34)*
Govt.	-0.025							
Spending	(-3.51)*							
Government		0.13						
Stability		(6.15)*						
Internal			0.085					
Conflict			(3.52)*					
External				0.045				
Conflict				(1.97)**				
Investment					0.168			
Profile					(7.66)*			
Religion in						-0.065		
Politics						(-1.98)**		
Ethno							0.002	
linguistic							(4.87)*	
yr1994								-0.07
								(-0.61)
yr1999								0.323
								(2.74)*
yr2004								0.84
								(7.46)*
yr2007								1.16
								(10.42)*
R	0.45	0.49	0.46	0.46	0.50	0.46	0.45	0.60
Adj. R	0.42	0.48	0.45	0.45	0.50	0.45	0.44	0.59
F	82.16	96.52	87.31	84.93	77.51	84.25	82.87	95.01
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	505	519	519	519	519	519	519	519

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-10: Corruption and FI: Panel Estimation: Random Effects (I)

Variables	Dependent Variable: Corruption							
FI	-0.0002	-0.0002	-0.0002	-0.0002	-0.0003	-0.0002	-0.0003	-0.0002
	(-1.89)**	(-1.91)**	(-1.71)***	(-1.62)***	(-3.24)*	(-1.70)***	(-2.40)*	(-2.03)**
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-3.15)*	(-3.92)*	(-4.21)*	(-3.58)*	(-5.06)*	(-4.62)**	(-3.99)*	(-4.02)*
Economic	-0.10	-0.10	-0.08	-0.07	-0.15	-0.06	-0.08	-0.10
Freedom	(-2.81)*	(-2.85)*	(-1.71)***	(-1.85)***	(-4.12)***	(-1.83)*	(-2.29)*	(-2.84)*
Rule of Law	-0.24	-0.26	-0.23	-0.19	-0.27	-0.26	-0.24	-0.24
	(-6.26)*	(-6.63)*	(-5.67)*	(-4.59)*	(-6.58)*	(-6.13)*	(-6.39)*	(-6.19)*
Govt.	-0.033							
Spending	(-3.88)*							
Trade		0.005						
Openness		(3.12)*						
Democracy			-0.05					
			(-1.03)					
Military in				0.10				
Politics				(2.93)*				
Education					0.01			
					(4.85)*			
Remittances						0.02		
						(2.22)**		
Inflation							0.0001	
							(1.26)	
Urbanization								0.000
								(2.66)*
RB	0.58	0.56	0.63	0.60	0.58	0.66	0.61	0.59
RO	0.45	0.45	0.46	0.45	0.43	0.51	0.48	0.45
Wald	148.99	140.81	147.68	143.65	147.72	166.15	132.94	127.07
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	515	520	529	529	499	439	503	529

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-11: Corruption and FI: Panel Estimation: Random Effects (II)

Variables	Dependent Variable: Corruption							
FI	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0003	-0.0002	-0.0002
	(-2.26)**	(-1.93)**	(-1.80)**	(-2.63)*	(-2.64)*	(-3.39)*	(-2.58)*	(-2.56)*
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-5.91)*	(-4.08)*	(-3.99)*	(-5.35)*	(-5.39)*	(-5.19)*	(-5.34)*	(-3.02)*
Economic	-0.17	-0.09	-0.10	-0.15	-0.15	-0.17	-0.16	-0.13
Freedom	(-5.55)*	(-2.52)*	(-3.03)*	(-5.29)*	(-5.49)*	(-5.96)*	(-5.70)*	(-4.06)*
Rule of Law	-0.31	-0.21	-0.24	-0.26	-0.28	-0.22	-0.29	-0.26
	(-8.67)*	(-5.16)*	(-5.62)*	(-5.85)*	(-7.75)*	(-5.83)*	(-8.18)*	(-6.70)*
Investment	0.17							
Profiles	(9.91*							
Religion in Politics		-0.09						
		(-2.48)*						
Ethno linguistic			0.01					
			(0.22)					
Internal Conflict				-.02				
				(-0.76)				
External Conflict					-.01			
					(-0.42)			
Government Stability						-0.14		
						(-5.03)*		
yr1994				-0.09	-0.08	-0.11	-0.09	-0.10
				(-0.76)	(-0.65)	(-1.07)	(-0.81)	(-0.92)
yr1999				0.15	0.15	0.33	0.13	.081
				(1.42)	(1.20)	(3.38)	(1.22)	(0.76)
yr2004				0.68	0.68	1.14	0.66	0.62
				(6.59)*	(6.81)*	(9.63)*	(6.48)*	(6.03)*
yr2007				1.02	1.01	1.38	0.99	0.94
				(9.61)*	(8.79)*	(12.55)*	(9.79)*	(9.07)*
East Asia & Pacific								0.77
								(2.59)*
Europe & Central Asia								0.95
								(3.32)*
Lat America & Caribbean								0.83
								(2.63)*
Middle East & North Africa								0.79
								(2.75)*
South Asia								0.96
								(2.56)*
Sub-Saharan Africa								0.68
								(2.28)**
Europe								0.05
								(0.19)
RB	0.61	0.60	0.61	0.68	0.68	0.68	0.68	0.71
RO	0.49	0.45	0.45	0.58	0.58	0.60	0.58	0.61
F	271.48	136.63	130.78	473.78	474.86	569.36	474.65	761.47
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	529	529	529	529	529	529	529	529

Table 4-12: Corruption and FI: Panel Estimation (System GMM)

Variables	Dependent Variable: Corruption						
FI	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004
	(-4.78)*	(-5.37)*	(-5.37)*	(-4.96)*	(-5.27)*	(-5.52)*	(-5.36)*
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-4.26)*	(-4.07)*	(-4.41)*	(-4.22)*	(-4.87)*	(-4.28)*	(-3.99)*
Economic	-0.15	-0.16	-0.16	-0.13	-0.14	-0.15	-0.17
Freedom	(-5.41)*	(-5.25)*	(-5.43)*	(-3.63)*	(-4.72)*	(-5.04)*	(-5.45)*
Rule of Law	-0.34	-0.32	-0.31	-0.29	-0.29	-0.32	-0.29
	(-6.83)*	(-6.17)*	(-6.44)*	(-5.50)*	(-4.85)*	(-6.31)*	(-5.81)*
Inflation	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	(3.15)*	(3.04)*	(3.54)*	(3.24)*	(1.83)***	(3.28)*	(3.38)*
Trade Openness		0.001 (0.60)					
Government Spending			-0.012 (-1.12)				
Military in Politics				0.08 (2.08)**			
Internal Conflict					-.03 (-1.22)		
External Conflict						-.03 (-1.12)	
Government Stability							-.09 (-2.79)*
Yr1994	-0.11	-0.18	-0.16	-0.11	-0.12	-0.08	-0.13
	(-1.75)***	(-2.89)*	(-2.42)*	(-1.80)***	(-1.82)***	(-1.12)***	(-1.85)***
Yr1999	0.15	0.07	0.09	0.13	0.18	0.21	0.29
	(1.36)	(0.58)	(0.74)	(1.11)	(1.60)***	(1.61)***	(2.87)*
Yr2004	0.67	0.62	0.61	0.67	0.71	0.70	0.97
	(5.14)*	(4.57)*	(4.54)*	(5.01)*	(5.21)*	(4.89)*	(6.74)*
Yr2007	1.03	0.95	0.97	1.02	1.07	1.04	1.26
	(7.98)*	(6.95)*	(7.25)*	(8.11)*	(7.86)*	(7.29)*	(9.23)*
Over id	70.42	80.45	79.08	80.12	76.58	79.69	79.94
	(0.07)	(0.07)	(0.08)	(0.07)	(0.12)	(0.08)	(0.11)
Hansen dif	18.52	20.27	18.05	23.27	23.47	24.46	20.40
	(0.42)	(0.50)	(0.65)	(0.33)	(0.32)	(0.27)	(0.50)
No of groups	116	116	116	116	116	116	116
No of Instruments	64	74	74	74	74	74	74
Wald	403.02	381.87	458.78	415.32	408.26	402.76	404.95
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AR1	0.36	0.31	0.24	0.46	0.31	0.38	0.83
AR2	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Observations	503	494	490	503	503	503	503

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-13: Corruption and FI: CS Estimation: Developing Countries

Variables	Dependent Variable: Corruption					
FI	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-2.31)*	(-2.67)*	(-2.88)*	(-2.99)*	(-2.90)*	(-3.06)*
PCY		-0.000	-0.000	-0.000	-0.000	-0.000
		(-3.05)*	(-1.65)***	(-0.86)	(-0.94)	(-0.65)
Economic			-0.13	-0.12	-0.12	-0.14
Freedom			(-2.47)*	(-2.53)*	(-2.67)*	(-3.02)*
Govt. Spending			-0.03	-0.01	-0.03	-.04
			(2.39)*	(-1.71)***	(-2.22)**	(-2.59)*
Rule of Law				-0.21	-0.17	-0.20
				(-2.47)*	(-2.00)**	(-2.44)*
Inflation					0.001	0.001
					(2.62)*	(3.18)*
Trade						0.001
Openness						(2.00)**
R	0.03	0.11	0.20	0.26	0.32	0.36
F	5.36	6.40	4.95	5.50	8.34	10.21
	(0.023)	(0.003)	(0.001)	(0.000)	(0.000)	(0.000)
Observations	93	92	90	90	89	89

Table 4-14: Corruption and FI: CS Estimation: Non-linearity

Variables	Dependent Variable: Corruption Index by TI		Dependent Variable: Corruption Index by WB		Dependent Variable: Corruption Index by ICRG	
FI	-0.018	-0.014	-0.008	-0.006	-0.006	-0.004
	(-4.91)*	(-4.04)*	(-4.93)*	(-4.00)*	(-2.30)**	(-1.41)
PCY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-10.77)*	(-9.04)*	(-9.64)*	(-7.84)*	(-5.20)*	(-3.63)*
Economic	-0.26	-0.26	-0.16	-0.17	-0.25	-0.26
Freedom	(-4.42)*	(-4.86)*	(-6.40)*	(-7.25)*	(-6.29)*	(-6.85)*
Govt.	-.03	-.009	-.015	-.003	-.001	-.015
Spending	(-1.60)***	(-0.52)	(-1.86)***	(-0.45)	(-0.07)	(-1.22)
Rule of		-0.34		-0.19		-0.24
Law		(-3.66)*		(-4.53)*		(-3.56)*
FI Square	0.000	0.000	0.000	0.000	0.000	0.000
	(4.22)*	(3.67)*	(4.16)*	(3.58)*	(2.20)**	(1.60)
R	0.82	0.84	0.82	0.85	0.61	0.66
F	96.47	91.96	100.37	101.87	35.30	34.66
	(0.000)	0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	113	113	116	116	116	116

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-15: Corruption and FI: Panel Estimation: Excluding Outliers

Variables	Full Sample	Corruption Index > 1		Corruption Index < 5	
FI	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004
	(-2.42)*	(-2.49)*	(-2.18)*	(-1.86)***	(-1.92)**
PCY	-0.000	-0.000	-0.000	-0.000	-0.000
	(-1.62)***	(-1.01)	(-3.00)*	(-6.04)**	(-5.61)**
Economic	-0.19	-0.11	-0.07	-0.14	-0.13
Freedom	(-8..02)*	(-4.92)*	(-2.43)*	(-5.95)*	(-5.20)*
Rule of Law	-0.34	-0.24	-0.21	-0.23	-0.22
	(-9.13)*	(-7.15)*	(-5.40)*	(-6.32)*	(-5.60)*
Govt.	-0.025	-.013	-.02	-.02	-.02
Spending	(-3.51)*	(-2.06)**	(-2.21)**	(-2.80)*	(-3.56)*
Trade			0.001		0.004
Openness			(1.05)		(4.39)*
Military in			0.07		0.05
Politics			(2.11)**		(1.6)***
Education			0.005		
			(2.70)**		
Remittances			0.01		
			(1.74)***		
R	0.45	0.25	0.29	0.45	0.47
Adj. R	0.42	0.24	0.27	0.44	0.46
F	82.16	30.76	16.60	77.84	60.43
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	545	467	368	487	484

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-16: Corruption and FI: A Spatial Analysis

Variables	Dependent Variable: Corruption					
SWC2	0.56	0.30	0.20	0.19	0.25	0.2
	(3.43)*	(1.91)**	(1.67)***	(1.60)***	(2.04)**	(1.70)***
FI		-.001	-.001	-.001	-.001	-.001
		(-2.20)**	(-2.94)*	(-2.96)*	(-2.06)**	(-2.87)*
PCY		-0.000	-0.000	-0.000	-0.000	-0.000
		(-5.35)*	(-2.13)**	(-2.06)**	(-1.20)	(-1.95)**
Economic			-0.18	-0.18	-0.11	-0.17
Freedom			(-4.35)*	(-4.38)*	(-2.76)*	(-4.28)*
Rule of law			-0.34	-0.32	-0.23	-0.37
			(-4.52)*	(-4.04)*	(-3.00)*	(-5.50)*
Government spending				-0.009		
				(-0.84)		
Bureaucracy quality					-0.37	
					(-3.77)*	
British Colony						-0.15
						(-1.19)
R	0.08	0.47	0.64	0.64	0.68	0.66
F	12.08	25.78	38.35	32.10	37.67	31.61
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	140	120	118	117	118	115

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.

Table 4-17: Corruption and Contagion: A spatial analysis with different lag lengths

Variables	SWC(99-03)	SWC(94-98)	SWC(89-93)	SWC(84-88)
SWC	0.21	0.19	0.19	0.19
	(2.31)*	(2.41)*	(2.43)*	(2.42)*
PCY	-0.000	-0.000	-0.000	-0.000
	(-2.33)*	(-1.26)	(-1.26)	(-0.25)
Democracy	-0.21	-0.25	-0.16	-0.27
	(-3.89)	(-4.77)*	(-2.43)*	(-5.26)*
Bureaucracy	-0.30	-0.24	-0.26	-0.21
Quality	(-3.18)*	(-2.72)*	(-5.0)*	(-2.35)*
Rule of Law	-0.24	-0.35	-0.36	-0.41
	(-3.69)*	(-5.36)*	(-5.41)*	(-6.15)*
R	0.76	0.80	0.80	0.81
Adj. R	0.75	0.79	0.79	0.80
F	79.40	94.56	95.78	96.91
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	134	125	123	117

*, **, and *** denote statistically significant at the 1 %, 5%, and 10% levels, respectively.
Spatially Weighted Corruption Index (SWC)

Appendix

Table 1: Description of Variables

Variables	Definitions	Sources
Per capita real GDP	GDP per capita (constant 2000 US$).	World Bank database World Bank (2008)
Credit as % of GDP	Credit as % of GDP represents claims on the non-financial private sector.	World Bank database, World Bank (2008)
M2 as % of GDP	It represents Broad money (money and quasi money).	World Bank database, World Bank (2008)
Financial Intermediation (FI)	The level of Financial Intermediation is determined by adding M2 as a % of GDP and credit to private sector as % of GDP.	World Bank database, World Bank (2008)
Trade Openness	It is the sum of exports and imports as a share of real GDP.	World Bank database, World Bank (2008)
Corruption	ICRG index 0-6 scale; where 6 indicate high degree of corruption and 0 indicate no corruption.	International Country Risk Guide, PRS group.
Corruption	Transparency International corruption index rescaled from 0 (absence of corruption) to 10 (highest corruption).	Transparency International.
Corruption	World Bank corruption index rescaled from -2.5 (absence of corruption) to 2.5 (highest corruption).	World Bank.
Democracy	ICRG index 0-6 scale; where 6 indicate high degree of democracy.	International Country Risk Guide, PRS group.
Military in Politics	ICRG index 0-6 scale; higher risk ratings (6) indicate a greater degree of military participation in politics and a higher level of political risk.	International Country Risk Guide, PRS group.
Religion in Politics	ICRG index 0-6 scale: higher ratings are given to countries where religious tensions are minimal.	International Country Risk Guide, PRS group.
Ethnic Tensions	ICRG index 0-6 scale; higher ratings are given to countries where tensions are minimal.	International Country Risk Guide, PRS group.
Rule of Law	ICRG index 0-6 scale; where 6 indicate high degree of law and order.	International Country Risk Guide, PRS group.
Bureaucracy Quality	ICRG index 0-4 scale; where 4 indicate high degree of law and order.	International Country Risk Guide, PRS group.
Government Stability	ICRG index 0-12 scale; where 0 indicates very high risk and 12 indicates very low risk.	International Country Risk Guide, PRS group.
Socioeconomic Conditions	ICRG index 0-12 scale; where 0 indicates very high risk and 12 indicates very low risk.	International Country Risk Guide, PRS group.
Investment Profiles	ICRG index 0-12 scale; where 0 indicates very high risk and 12 indicates very low risk.	International Country Risk Guide, PRS group.
Internal Conflict	ICRG index 0-12 scale; where 0 indicates very high risk and 12 indicates very low risk.	International Country Risk Guide, PRS group.
External Conflict	ICRG index 0-12 scale; where 0 indicates very high risk and 12 indicates very low risk.	International Country Risk Guide, PRS group.
Economic Freedom	Freedom House data. index rescaled 0 (low economic freedom)-7 (high economic freedom)	Fraser Institute.
Inflation	Inflation, consumer prices (annual %)	World Bank database, World Bank (2008)
Government Spending	General government final consumption expenditure (% of GDP)	World Bank database, World Bank (2008)
Remittances	Workers' remittances and compensation of employees, received (% of GDP)	World Bank database, World Bank (2008)
Military Spending	Military expenditure (% of GDP)	World Bank database, World Bank (2008)
Arm Trade	Arms exports plus arms imports (constant 1990 US$)	World Bank database, World Bank (2008)
Education	The secondary school enrollment as % of age group is at the beginning of the period.	World Bank database, World Bank (2008)
Urbanization	Urban Population	World Bank database, World Bank (2008)
British Colony	A dummy variable that is 1 for British Colony	http://flagspot.net/flags/gb-colon.html

5. Distributional and Poverty Consequences of Globalisation: A Dynamic Comparative Analysis for Developing Countries

5.1. Introduction

It is widely accepted by economists and policy makers that over a long period of time open economies generate more gains compared to closed ones, and policies which promote openness contribute significantly to economic growth, employment enhancement and poverty eradication. In the short run, however, a move towards openness-trade liberalization can have a deleterious effect on the poorer members of society. Indeed, it is quite possible that successful open regimes, even in the long run, may leave a number of people behind in poverty. Since trade liberalization by its nature implies adjustment, it is likely to have distributional impacts that normally harm poorer actors in the economy.

Trade liberalization, or openness to trade, is now generally considered as economically beneficial because it increases the size of the overall pie available to all members of society. However, recently anti-globalisation critics have suggested that openness to trade is in fact socially harmful on several dimensions, among them the issues of poverty, income inequality and unemployment. The nub of this argument is that free trade accentuates, rather than ameliorates, and it intensifies, rather than diminishes, poverty and income inequality in poor countries. In order to understand the impact of trade liberalization on the above-noted development process the literature emphasises two different strands of argumentation: the static and dynamic. First, according to the static argument, the central effect of trade liberalisation on poverty is assumed to come from the effects on real wages of unskilled workers endowed with labour but with no human or financial capital. The natural conjecture following the Stolper-Samuelson (SS) proposition would be that freer trade should help in the reduction of poverty to poorer countries which use their comparative advantage to export labour-intensive goods. A rise in exports based on labour intensive production techniques leads to a rise in the real wage rate of the unskilled worker and this is instrumental in reducing poverty and income inequality. This, in fact, is the central message of Anne Krueger's (1983) findings from a multi-country project on the effects of trade on wages and employment in developing countries. Another approach also suggests that trade is beneficial for poverty

reduction in developing countries because the consumer surplus increases in the wake of more competitive prices in an open economy.

According to the dynamic argument, free trade reduces poverty in two ways: trade increases growth and growth reduces poverty. In regard to the trade promotes growth hypotheses, there are ample precedents. For instance, Dennis Robertson (1940) characterized trade as an "engine of growth." With regard to the growth reduces poverty argument, Adam Smith (1776) suggested that when society is "advancing to the further acquisition . . . the condition of the laboring poor, of the great body of the people, seems to be the happiest."

According to the well-known Kuznets (1955) inverted-U hypothesis, income inequality increases during the early stages of economic development and, after reaching a turning point, declines. Although, the Kuznets curve exhibits a negative relationship between economic growth and inequality in the long run, poverty is still a long standing problem in the world despite many growth episodes. However, the literature is not conclusive in establishing a relationship between economic growth and income inequality and so it is difficult to say whether growth is good or bad for the poor and whether, in fact, the Kuznets curve holds? For this reason, the relationship between economic growth and income inequality is a key concern in discussions of development policy.

Theoretically speaking, the impact of globalisation on inequality, both within and across countries, is ambiguous and depends on the circumstances of individual countries as well as on the aspect of globalisation involved (O'Rourke, 2001). Different theories have been put forward to analyse the effect of globalisation on inequality, which can be grouped into three categories (Wade, 2001): neoclassical growth theory, endogenous growth theory, and the dependency theory of sociologists. Neo-classical growth theory expects income convergence across countries in the long run due to increased international mobility of capital. In contrast, endogenous growth theory predicts less convergence and, more likely, divergence, as increasing returns to technological innovation offset the diminishing returns to capital. Finally, the dependency theory suggests that developing countries reap lesser rewards from economic integration as they have relatively limited access to international markets and a narrow export base; hence, globalisation does not lead to absolute convergence.

In the presence of such diversified theoretical predictions, estimating the actual impact of globalisation on inequality and poverty remains largely an empirical issue. The available evidence, however, does not produce a consensus and the effect of globalisation on inequality and poverty remains ambiguous. Also, no previous study has tried to quantify the relative contributions of globalisation and other fundamental variables on inequality and poverty in developing countries. Clearly, from the national and international policy perspectives, it is imperative to explore both the nature and the importance of various factors in generating the inequality and poverty.

In a recent study, (Foellmi and Oechslin (2010) predict a potential link between globalisation and financial development using a general equilibrium model. Their model shows that economies where financial market imperfections prevail, globalisation (economic integration) tends to increase inequality by amplifying the income differences within the entrepreneurial class. Economic integration favours the richest entrepreneurs by providing them new investment opportunities and relieving them from lending to poorer entrepreneurs through underdeveloped financial system. This process increases the domestic borrowing rate which hurts the small firms as they mainly depend on external finance. To best of our knowledge, this predicted theoretical link between globalisation and inequality has not been empirically tested.

In this study we attempt to fill the gaps in the existing literature and lend a fresh perspective to the globalisation, inequality and poverty debate. We address five key issues: (1) Does economic growth benefit different economic actors equally or does it comes at the cost of increased inequality leaving some in society poorer?; (2) Is the effect perhaps different over the path of development in the long run?; (3) Does high financial intermediation reduce poverty and inequality?; (4) Does openness have spillover benefits which are shared equally?; (5) What is the role of government in the process - does government spending reduce potentially existing inequalities and poverty?

The remainder of the paper is structured as follows. Section 2 provides a review of related literature and theory on the predictors of inequality and poverty. Section 3 presents an analytical frame work for our empirical study and section 4 provides a discussion of data and

estimation procedures, while in section 5 we present our empirical findings. Section 6 is our concluding section.

5.2. Literature Review

According to the Heckscher-Ohlin (HO) model, a greater degree of openness to trade leads to high relative demand of those factors of production where a country has comparative advantage. In the case of developing countries, low skilled labour abundant countries, demand for unskilled labour increases, thereby the wage differential decreases. However, both the HO model and the SS theorem assume that technologies are identical across countries. If this assumption is dropped then the final effect of openness to trade on wage differentials also depends on the technology diffusion from the developed world to the developing world. This technology transfer is normally skill biased and generates a skill premium, thereby leading to more unequal distribution of wages (see, for example, Berman et. al., 1994; Autor et. al., 1998).

In the literature, it is argued that when developing countries embark on trade liberalisation policies, a substantial up-grading of technology also occurs through the two main channels of exports and imports. A rise in imports allows a developing country to implement embodied technological change through the imports of mature machines, including second hand capital goods (see, for example, Barba et. al., 2002). Furthermore, Perkins and Neumayer (2005) point out that a developing country that is regarded as a laggard enjoys the benefit of last comer by directly accessing relatively new technology.

Trade openness leads to technical up-grading by allowing a rise in the international flows of capital goods (Acemoglu, 2003). Technological up-grading is defined as "skill enhancing trade hypotheses" by (Robbins, 1996, 2003). These authors point out that when the south rapidly adopted the modern skill intensive technologies, resulting high demand for labour widened the existing wage income dispersion in developing countries.

Similarly, a rise in exports induces/forces a developing country to replace outdated technologies for better access in the markets of developed countries. Yeaple (2005) shows that the adoption of new technologies by exporting guarantees more profits and thereby a firms

demand for skilled labour. Hanson and Harrison (1999) also provide evidence on the inequality enhancing role of exports by documenting a case study of Mexico where firms in the exporting sector employ a higher share of white-collar workers as compared to non exporting plants. Furthermore, Berman and Machine (2000, 2004) find evidence for an increased demand for skill in developing countries. Conte and Vivarelli (2007) also provide similar evidence for developing countries. These models provide evidence for skilled labour demand in the wake of increased imports of capital goods but do not link it directly to income inequality and poverty. This is a gap which we attempt to address in this study.

The effects of globalisation on poverty in developing countries has recently become a key concern and a policy issue for economists and practitioners. More than one sixth of the worlds population live under the poverty line of $1 a day, half of the developing countries live on less than $2 a day (Harrison et al.,). These poverty facts in the developing world occur at the same time as most of the developing countries have embarked on liberalized trade policy and are becoming integrated into the world economy. For example, Greenway et al., (2002) demonstrate that during 1980-2000 more than 100 developing countries have undertaken trade liberalization reforms. Keeping in view these facts, it is easy to understand why critics of globalisation blame most of the woes of globalisation on trade liberalization.

Carneiro and Arbache (2003) use a computable general equilibrium model to simulate different trade liberalization policy scenarios and counterfactual micro simulations to assess the impacts of greater trade openness on household income distribution and the poverty ratio. They conclude for Brazil that trade liberalization alone may not be sufficient to significantly reduce poverty and inequality. Gibson (2000**)** analyses the changes in poverty in Papua New Guinea during the 1990s adjustment programme. Data from urban household surveys in 1986 and 1996 are used to calculate the change in the incidence, depth and severity of poverty. They find that there was a rise in both the depth and severity of poverty in the 1990s, with the major contributor being growth in inequality.

How does globalisation impact on poverty? Does globalisation benefit poor people in the developing world? Will on going efforts to eliminate further trade barriers improve the welfare of the poor people in the world? Surprisingly, little attention has been paid to these important questions. Winters et al (2004), Goldberg and Povcnick (2004, 2006), and Ravallion (2004)

review the recent evidence. All of these studies acknowledge that one can only review the indirect evidence on the theme of globalisation and poverty linkages and there is hardly any study which tests for the direct linkage between globalisation and poverty.[30] According to the "orthodox" perspective on openness to trade and poverty, with reference to writings of Anne Krueger and David Dollar and others, trade liberalization is good for growth and growth is good for the poor. Globalisation critics point out that openness to trade is associated with increasing income inequalities that push poor people further behind. David Dollar and Anne Krueger argue that globalisation is inversely associated with income inequalities in poor countries because these countries specialize in the production of those goods that use unskilled labour. However, the recent literature has provided evidence that orthodox views on the linkages between globalisation and poverty are not valid.

5.2.1: Theory of inequality and poverty determinants

In this section we analyze the factors that explain variations in cross country income inequalities and poverty. The most important factor that explains cross country income inequality is economic growth. The Kuznets Curve suggests an inverse U-shaped relationship between economic development and income inequality that implies at an early stage of economic development economic growth increase inequalities and eventually decrease them at a later stage of development due to the trickle down effects of economic growth. However, this relationship does not appear to be stable and it varies with a change in methodology, sample size and conditioning variables. Paukerit (1973) and Ahluwalia (1976) support the Kuznet's point of view. But some later studies (Deininger and Squire, 1998; Ravallian, 1995) do not find economic growth affecting income distribution.

The theoretical literature provides different hypotheses concerning financial development and income inequality. For example, some studies (Banerjee and Newman, 1993; Galor and Zeira, 1993; Aghion and Bolton, 1997) claim that financial intermediary development is pro-poor, thereby decreasing inequality. Lamoreaux (1986), Haber (1991), Maurer and Haber (2003), on the other hand, argued that at an early stage of financial deepening access to financial services is limited to incumbents and will thus raise their income relevant to the income of the poor.

[30] Winters et al (2004) point out in their comprehensive and significant survey that "there are no direct studies of the poverty effects of trade and trade liberalization". Goldberg and Povcnick (2004, 2006) write in their excellent review "while the literature on trade and inequality is voluminous, there is no work to date on the relationship between trade liberalization and poverty".

Other models (Greenwood and Jovnovie, 1990), posit a non-linear inverted U-shaped relationship between financial development and income distribution.

Inflation may have a strong redistributive effect which could be positive (through its effects on individual income wealth) or negative (through a progressive tax system). Inflation hurts the poorest segment of society because it causes the worsening of existing income inequalities in the economy as money transfers from the poor to the rich and it becomes harder to meet life's necessities and people are trapped in a vicious circle of poverty. The negative effects of inflation on the poor are intensified when wages fail to chase increasing price levels. In developing countries, trade unions are weak and minimum wage laws do not work properly, due to weak institutions, and workers are left with less or no rise in wages, while firms enjoy the benefits of rising prices and get richer.

Government spending is also one of the factors that affects income inequality; income inequality may increase or decrease with government consumption. For example, if most of the redistribution through the tax and transfer system is towards the poor, government consumption might result in greater equality. However, it could have the opposite effects if government consumption is not developmental (i.e. not pro-poor). Cross country studies (Stock, 1978; Boyd, 1988), find the size of the public sector to be significant in reducing income inequality.

Differences in population growth across countries is another factor explaining inter-country variation in income inequality. Although population growth generally declines as per capita income rises, there is considerable variation in the population growth rate among countries at a similar income level. Generally, it is believed that faster population growth is associated with higher income inequality. One of the reasons for this is that the dependency burden may be higher for the poorer group.

One of the most important factors underlying income inequality is the level of access to education. There is a two-way link here; on the one hand an unequal educational opportunity leads to greater inequality in income distribution by widening the skilled and productivity gaps in the working population, while on the other, unequal income distribution tends to prevent the poor investing in education and acquiring skills.

Trade liberalization by its nature implies adjustment and so is likely to have distributional impacts. As far as trade liberalization is concerned, its effect on income distribution can go either way in the sense that it may worsen or alleviate the distribution of income in developing countries. A number of studies have attempted to relate trade policy variables to economic growth (Dollar, 1992; Sachs and Warner, 1995; Edwards, 1992). These studies found that trade openness is associated with more rapid growth.

Having discussed inequality factors, we now provide a brief discussion on poverty predictors. One of the most widely promoted hypothesis in the social sciences is that economic growth reduces poverty. While growth without distribution is not merely a theoretical possibility, but is being experienced in certain countries or regions, most researchers consider that the widespread poverty in developing countries results from slow economic accumulation. The notion of a "trickle down" effect proposes a downwards-spread of the benefits of economic growth, although this growth sequencing does not indicate the time lag that the poor must wait after the rich get richer first (see, for example, Ravallion, 1995, 1997).

There is a theoretical consensus that rapid population growth aggravates poverty. Rapid population growth necessarily redistributes the population structure in favour of the young and increases the size of families in the poor stratum, thus increasing poverty (Deaton and Paxon, 1997). This Malthusian process is more likely to affect developing countries, where a combination of poor agricultural economies, limited human capital and rudimentary technology mean that the increment of population does not translate to increasing labour forces and consequently upgrading income levels. (Becker, Glaeser and Murphy, 1999).

5.3. Methodology

In this section we introduce a methodological frame work for inequality and poverty. Following the conventional wisdom in the literature on inequality, the Kuznets curve has been modelled (see, for example, Randolph and Lot, 1993; Ram, 1995; MacDonald and Majeed, 2010) using the following kind of regression equation:

5.3.1: Inequality model

$$\log Gini_{it} = \alpha_{it} + \gamma_1 \log Y_{it} + \gamma_2 \log Y^2{}_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (I)$$

$$(\ i \ = \ 1\ , \ldots\ldots\ldots \quad N \ ; \ t \ = \ 1\ , \ldots\ldots\ldots \quad T\ )$$

where log $Gini_{it}$ is the natural logarithm of the Gini Index, log Y_{it} is the natural logarithm of income per capita, adjusted using PPP weights, log Y^2_{it} controls for nonlinear conditional convergence across countries and ε_{it} is a disturbance term. The expected signs for γ_1 and γ_2 in equation (1) are positive and negative, respectively. As we have seen, cross country inequality variation depends on other factors such as government size, education and population growth and therefore equation (1) should be modified accordingly. For example, higher targeted government spending could reduce inequalities given that rent seeking activities are avoided and government spending enhances the possibilities and opportunities for the poor. A rise in human capital, HK, can be expected to narrow the gap between poor and rich as people with high investment in HK are less likely to fall into poverty. Additionally, taking on board these extra variables, equation (I) can be rewritten as:

$$\log Gini_{it} = \alpha_{it} + \gamma_1 \log Y_{it} + \gamma_2 \log Y^2{}_{it} + \gamma_3 \log G_{it} + \gamma_4 \log HK_{it} + \gamma_5 \Delta Pop_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots (II)$$

where G_{it} is the natural log of government spending, as a proxy for government spending on the social sector, $HK_{it,}$is measured as the secondary school enrolment rate, ΔPop_{it} is the percentage change in total population, and ε_{it} is a disturbance term We also propose estimating a variant of (II) which, following the suggestions of Barro (2000) and Aisbett (2005), includes globalisation variables:

$$\log Gini_{it} = \alpha_{it} + \gamma_1 \log Y_{it} + \gamma_2 \log Y^2{}_{it} + \gamma_3 \log G_{it} + \gamma_4 \log HK_{it} + \gamma_5 \Delta Pop_{it} + \gamma_6 [Trade_{it}/Y] + \gamma_7 [FDI_{it}/Y] + \varepsilon_{it} \ldots (III)$$

where Trade and FDI denote and respectively. According to the Stolper-Samuelson theorem the expected sign for γ_6 depends on the comparative advantage of an economy relative to its trading partners. Similarly, the expected sign, γ_7, could be either positive or negative.

5.3.2: Poverty model

In order to build a poverty model this study follows a basic poverty-growth model suggested by Ravallion (1997). In the first step, we estimate the elasticity of poverty with respect to

economic growth for developing countries in separate regressions. In the next step we introduce measures for inequality and the level of economic development in order to estimate their effects on existing poverty incidence. Due to data constraints we measure the incidence of poverty using the headcount index, defined as the population living below one dollar a day per capita (PPP adjusted), which is a standard measure used in literature). The relationship for growth-poverty elasticity can be written as

$$\log P_{it} = \alpha_{it} + \beta_1 g + \varepsilon_{it} \quad \text{.....(1)}$$

$$(i = 1 ,..... \quad N \; ; t = 1 ,..... \quad T)$$

where P_{it} indicates poverty in country i at time t and g_{it} measures the annual growth rate. The coefficient β_1 measures elasticity of poverty with respect to growth given by g, and e is an error term. An estimated value of β_1 gives the average growth elasticity of poverty in developing countries. However, this average measure could be misleading because β_1 differs across countries and over time depending upon other poverty determinants that explain poverty variation. For example, Bourguignon (2003) points out the importance of income distribution and the initial level of development as additional controls of poverty. The modified version of equation (1) that includes an inequality elasticity of poverty and economic development can be written as:

$$\log P_{it} = \alpha_{it} + \beta_1 g + \beta_2 \log(ineq) + \beta_3 (X_{it}) + \varepsilon_{it} \quad \text{.....(2)}$$

where P_{it} refers to the natural logarithm of the head count ratio, g_{it} is the annual growth rate of GDP between two survey years, $Ineq_{it}$ is the natural logarithm of the gini index X_{it} is a vector of control variables for poverty other than economic growth and income distribution. In addition to the initial distribution of income and the level of economic development, poverty results from complex economic and social processes. For these reasons we extend this model to include other factors. Recent studies suggest that households with better profiles of human capital are less prone to poverty incidence as compared to those with a lower acquisition of human capital. In this study we proxy human capital with the average year of schooling. Finally, we include measures of globalisation in our model. Conventionally, in the literature two measures of globalisation are used, namely trade and capital flows. Winter et al. (2004) finds that trade liberalization reduces poverty in the long run, while Carneiro and Arbache

(2003) do not find a significant affect of openness to trade on inequality and poverty using CGE model.

$$\log P_{it} = \alpha_{it} + \beta_1 g + \beta_2 \log(ineq) + \beta_3 (X_{it}) + \beta_4 (Trade / Y) + \beta_5 (FDI / Y) + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots (3)$$

where $trade_{it}$ is the ratio of exports plus imports to GDP and FDI_{it} is the ratio of FDI inflow to GDP.

5.4. Data and Estimation Procedure

In this study we measure income inequality using the Gini coefficient, which is one of the most popular representations of income inequality. It is based on the Lorenz Curve, which plots the share of population against the share of income received and has a minimum value of 0 (the case of perfect equality) and a maximum value of 1 (perfect inequality). The Income inequality variable is unlikely to be comparable across countries due to differences in definitions and methodologies. Missing values in Income inequality data are the major problem in cross country analysis since many of the developing countries have only one or two observations. Therefore, we expanded the existing database by including comparable data on inequality from recent household surveys contained in World Bank (2008), UNU-WIDER (2008), Garbis (2005) and IMF Staff reports.

To make the data more comparable across countries we take data on variables in the form of averages between two survey years. For example, per capita real GDP growth rates are annual averages between two survey years. We then construct a panel data set for 65 developing countries for the period 1970-2008 have been assembled with the data averaged over periods of three to seven years (which is the minimum and maximum gap between two survey years), depending on the availability of the inequality data. The minimum number of observations for each country is three and the maximum nine. That is, only countries with observations for at least three consecutive periods are included. In order to conduct a comparative analysis developing countries have been split into two groups: countries with high financial intermediation and those with low financial intermediation. The countries above the median value of HFI are ranked as HFI countries.

To measure trade liberalization, we sum exports and imports and then divide this term by gross domestic product. Data on imports and exports are the annual averages between two survey years. Data on exports and imports are derived from the IFS database. Population growth rates are taken from the World Bank development reports. The secondary school enrolment is at the beginning of the period and derived from the World Bank database. Data on the ratio of government expenditure and investment as shares of GDP are averages for the period between two survey years and come from the IFS.

Figure 1 shows that Kuznets curve holds in developing countries. The relationship between economic development and income inequalities is non-monotonic which implies that initially both variables move in the same direction and after reaching a certain threshold level of the economic development, where trickle down effects begin, income inequalities tend to fall in response to higher level of the economic development. Figure 2 has been drawn to view the relationship between income inequalities and economic development only in the HFI economies. This set of countries provides a clear existence of non-monotonic relationship between the income inequalities and the economic development. However, Figure 3 which captures the same relationship in the LFI economies does not provide a solid picture of the Kuznets curve. Though, in this sample the Kuznets curve holds but comparatively the Kuznets curve is stronger for the HFI countries, which may imply that financial sector liberalization could be a way for a country to attain the threshold level of economic development sooner than in the absence of such liberalisation, with the consequent spillover effects to the poorest segment of the society.

Tables 3 and 4 provide descriptive statistics for the HFI and the LFI economies, respectively. The major facts from the descriptive statistics are as follows. First, economic growth, PCY, human capital, government spending are, on average, higher in the HFI economies while income inequality, poverty and inflations are higher in the LFI economies. This simple finding from descriptive statistics implies that economic indicators in the HFI economies are better as compared to the LFI countries. Second, a noticeable difference has been observed for poverty and inflation describing variables. The inflation in the LFI economies is 30% as compared to 16% in the HFI economies, almost double. Similarly, the poverty index in the LFI economies is 36% as compared to 20% in the HFI economies. This significant difference for the inflation and the poverty indicators in these two set of countries indicates that the inflation could be a

key variable that hits poor people hard. Finally, our key variables of concern, openness to trade and FDI, provide mixed exposure to globalisation. In the case of openness to trade, the HFI economies are on average more open to trade while in the case of FDI, the LFI economies receive more FDI.

5.4.1: Estimation technique

We now discuss the estimation procedure used for inequality and poverty models. The use of pooled time-series and cross-section data provides a large sample that is expected to yield efficient parameter estimates. Ordinary Least Squares (OLS) does not address the issue of omitted variable bias. If a region, country, or some group specific factors affect inequality and poverty, explanatory variables would capture the effects of these factors and estimates would not represent the true effect of the explanatory variables. Baltagi (2001) proposes fixed effect econometric techniques to estimate panel data, which could avoid the problem of omitted variable bias. However, in the presence of a lagged independent variable this technique gives biased parameter estimates and in this case we use a Two Stage Least Square (2SLS) estimator. This technique addresses the issue of endogeneity and also addresses the problem of omitted variables bias. We also use alternative econometric techniques such as Limited Information Maximum Likelihood (LIML), Generalized Methods of Moments (GMM) and System-GMM.

In this study, we mainly focus on the generalized method of Moments (GMM) estimation technique that has been developed for dynamic panel data analysis. This technique has been introduced by Holtz-Eakin *et al*. (1990), Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1997). GMM controls for endogeneity of all the explanatory variables, allows for the inclusion of lagged dependent variables as regressors and accounts for unobserved country-specific effects. For GMM estimation sufficient instruments are required. Following the standard convention in the literature, the equations are estimated using lagged first differences as instrument.

5.5. Results and Discussion

The estimation procedure in this study proceeds in the following way. First, parameter estimates are drawn for all selected developing countries and then for sub samples of high financial intermediation (HFI) and low financial intermediation (LFI) countries for

comparative purposes. Second, we initially focus on the distributional consequences of globalisation and before moving on to the poverty consequences. Third, and following the approach in other studies, we initially present results obtained using OLS econometric methods, before moving on to different econometrics techniques which address the possible problem of endogeneity.

Table 5-6 presents our results on income distribution for developing countries. Column (2) of the Table indicates that the relationship between income distribution and the level of economic development is non-monotonic implying that at lower levels of economic development income inequalities are high then after reaching a threshold level of high economic development, income inequalities tend to fall. The estimated coefficient for Y_{it} and Y^2_{it} are of the expected signs and highly significant. This relationship is robust to the inclusion of additional controls. The parameter estimates for Y_{it} and Y^2_{it} remain positive and significant in all columns.

Columns (3-6) provide significant evidence of a negative relationship between high financial intermediation and income distribution which means that financial liberalization could bridge the gap between rich and poor by providing private credit facilities. Inflation turns out to be positive and significant, indicating higher inflation rates widen the gap between rich and poor, hurting the poor relatively more. The role of government appears significant in reducing income inequalities.

Table 5-7 replicates the results of Table 5-6, using alternative econometric techniques and controlling for the issue of endogeneity. The estimated coefficients for Y_{it} and Y^2_{it} are significant in all columns and of the expected signs. This implies that the relationship between economic development and income inequalities changes over time. The estimated coefficient on the linear term is about 1.9 and -0.11 on the nonlinear (squared) term. Here an argument can be made that economic development leaves behind poorer members of an economy in the short run, but once a threshold level of economic development is achieved in the long term then the poor also benefit from the development process.

Financial liberalization again appears to be negatively associated with income inequalities and its coefficient is around 0.001. The government seems to play an important role in reducing

income inequalities as the estimated coefficients on government spending in all the regressions are significant.

Table 5-8 provides the results for the benchmark model with the addition of the control variable for openness to trade proxying globalisation. The estimated coefficient on openness to trade is insignificant in all regressions, implying that globalisation does not play any significant role in impacting on inequalities. Other parameter estimates remain the same in terms of signs and significance, although overall the level of significance is slightly improved when openness to trade is controlled for.

Table 5-9 reports empirical estimates for the benchmark model including FDI inflows (a measure of globalisation), but excluding openness to trade. A simple correlation matrix shows that openness to trade and FDI are positively correlated. The correlation between the two is around 28 % and this may create a problem of multicolinearity. In order to avoid multicolinearity, and to assess the exclusive contribution of both measures of globalisation, we examine the influence of these terms individually. The results reveal that the estimated coefficient on FDI is about 0.02 and highly significant in the first 4 columns of Table 5-9. However, the level of significance drops slightly in the 6^{th} column of the Table but the overall size of the coefficient, the direction of causality and the level of significance all are robust.

The coefficient on inflation turns out to be positive and significant. The magnitude of the estimated value of the coefficient on inflation is a robust 0.002, while the level of significance is 1% in all regressions. In all of our estimations from Table 5-6 through to Table 5-9 the standard statistical tests such as F stat, Wald Test, Sargan Test and J stat support the estimated model.

We can draw the following key findings for our group of developing countries. First, the Kuznets curve holds in developing countries and this reinforces the importance of policies that built a threshold level of economic development to pull the poor out of the poverty trap. Second, we find that openness to trade does not play any significant role in impacting on income inequalities, while FDI exerts a positive influence on existing inequalities and this implies that globalisation does not have a favourable impact on income distribution. Third, financial liberalization exerts a negative influence on income distribution while inflation

exerts a positive influence. Fourth, government appears to play an important role in reducing income inequalities in developing countries.

Inequality in countries with a high level of financial intermediation.

In Table 5-10 through to 5-12 we present the results for those economies which have a high level of financial intermediation. Table 5-10 contains the benchmark results without globalisation and it is evident from all columns of the Table that benchmark findings that we reported for all developing countries are not affected in this specific sample of countries. However, we find that openness to trade here is statistically insignificant, although it enters with a consistently negative sign. The impact of FDI is insignificant in all regressions, except column (3) of Table 5-12 where its effect is positive and significant at the 10% level of significance. Overall then globalisation does not have a favourable effect for the high financial intermediation countries, as in the developing country sample. However, globalisation as represented by openness to trade is significant at the 10% level in two cases, which implies that globalisation may have some limited effect for HFI economies.

Inequality in countries with a low level of financial intermediation.

In Tables 5-13 and 5-14 we present the results for low financial intermediation countries. In this sample the Kuznets curve holds but comparatively the Kuznets curve is stronger for the HFI countries, which may imply that financial sector liberalization could be a way for a country to attain the threshold level of economic development sooner than in the absence of such liberalisation, with the consequent spillover effects to the poorest segment of the society. As in the case of the HFI countries, openness to trade is insignificant although less so. The FDI term is insignificant in the LFI economies and the results for government spending and inflation are similar to the HFI economies, although inflation makes a comparatively more significant contribution to inequalities in HFI countries. Overall the results indicate that the degree of openness of a developing country does not have a favourable effect on poverty and, specifically, it does not contribute favourably to LFI economies in terms of income distribution.

Table 5-15 provides results for the poverty model for all developing countries. All columns of the table indicate that economic growth is robustly and negatively associated with poverty. It

is the key indicator of economic performance of a country that promises multiple opportunities for economic agents, including the poor. Higher income inequalities are positively and significantly associated with poverty incidence. Higher unequal distribution of wealth is good for the rich as it provides them with a wider set of opportunities. For example, a rich family have better access to human and capital investment, while the poor remain poor due to restricted opportunities. The effects of inflation are disproportional and normally hurt the poor. The panel regression results in Table 5-15 provide robust and positive effects of inflation on poor people. This is interesting to note since the government sector once again appears a major factor in fighting against poverty.

Table 5-16 provides results for the poverty model for HFI countries. It is interesting to note that both trade and FDI turn out to be negative and significant, implying that strong domestic financial institutions could be a source of enhancing the capacity of an economy to take advantage of a globalizing world. This finding also implies that an economy needs to achieve a certain level of financial depth before it can derive the benefits of globalisation and reduce the risks of the globalisation. In other words, reforms of domestic financial institutions are important before an economy embarks on globalisation.

Table 5-17 provides results for the poverty model for LFI countries. This sample of countries provides a sharp contrast for our key variables of interest. In the LFI economies, both openness to trade and FDI are bad for the poor, as the estimated coefficients on both openness to trade and FDI are highly significant with positive signs. In addition, the effect of government spending is not robust and it appears that government is not playing a significant role in the LFI economies. This finding suggests that the poor in the LFI economies are more prone to vagaries of globalisation. Hence, globalisation, in LFI economies, accentuates rather than ameliorates poverty.

5.6. Conclusion

The purpose of this study has been to assess the consequences of globalisation for developing countries in general and comparatively for high financial intermediation (HFI) countries over a long period 1970 to 2008. The study is unique in the way that it disaggregates consequences of globalisation for two sets of developing countries and uses more comparable statistics for

inequality and poverty. Furthermore, it explicitly controls for high financial intermediation and endogeneity issues.

With reference to the research question posed for developing countries, we summarise the following major findings. First, the Kuznets curve holds in developing countries and this necessitates the importance of policies that build a threshold level of economic development to pick up the poor from poverty traps. Second, openness to trade does not play any significant role in impacting on income inequalities, while FDI exerts a positive influence on existing inequalities that implies globalisation does not have a favourable impact on income distribution. Third, financial liberalization exerts a negative influence on income distribution while inflation exerts positive influence. Fourth, government appears to be an important factor in reducing income inequality gaps.

The main findings of the study for the distributional consequences of globalisation in HFI countries are: First, the evidence on the existence of the Kuznets curve are relatively strong in HFI countries and this implies financial sector liberalization could be a source of achieving the threshold level of economic development earlier, and this has a beneficial spillover effect for the poorer segment of society. Second, openness to trade is insignificant with a negative sign however compared to the LFI countries level of insignificance is not high. Third, the impact of FDI is significant with a positive sign but this result is not robust. Overall, we do not find that globalisation has a favourable effect on distribution in the HFI sample of countries. However, globalisation as measured by trade openness to trade is close to the 10% significance level which suggests that globalisation may have a favourable effect on openness to trade in HFI economies. Fourth, inflation exerts a positive influence while government appears an important factor in improving income distribution.

In our modelling of the poverty consequences of globalisation for the developing world we found the following. First, the estimated coefficient on economic growth is robustly significant with a negative sign that implies economic growth is good for the poor. Second, the role of government is significant in reducing poverty as the estimated coefficient on government expenditures is robustly significant with a negative sign. The effects of inflation are disproportional and normally hurt the poor. The panel regression results provide robust and

positive effects of inflation on poor people. It is interesting to note that the government sector once again appears a major factor in the fight against poverty.

In sum, globalisation as represented by openness to trade and FDI accentuates rather than ameliorates poverty and amongst domestic factors we find that economic growth is good for the poor while high income inequality hurts poor people and increases their suffering. However, we find that a sharp contrast arises in our comparative analysis of HFI and LFI countries. In the HFI economies both openness to trade and FDI are good for the poor, as the estimated coefficients on both are highly significant with negative signs. In contrast our results show that globalisation hurts the poor in LFI countries as the coefficient on both openness to trade and FDI are highly significant, with positive signs.

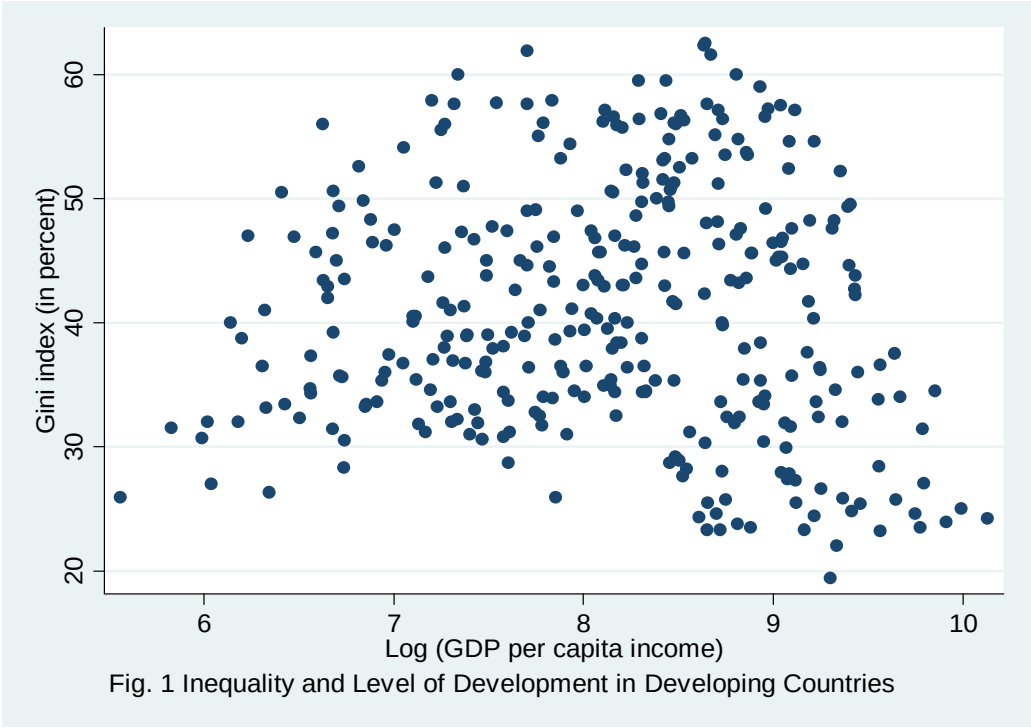


Figure 5-1: Inequality and Level of Development in Developing Countries

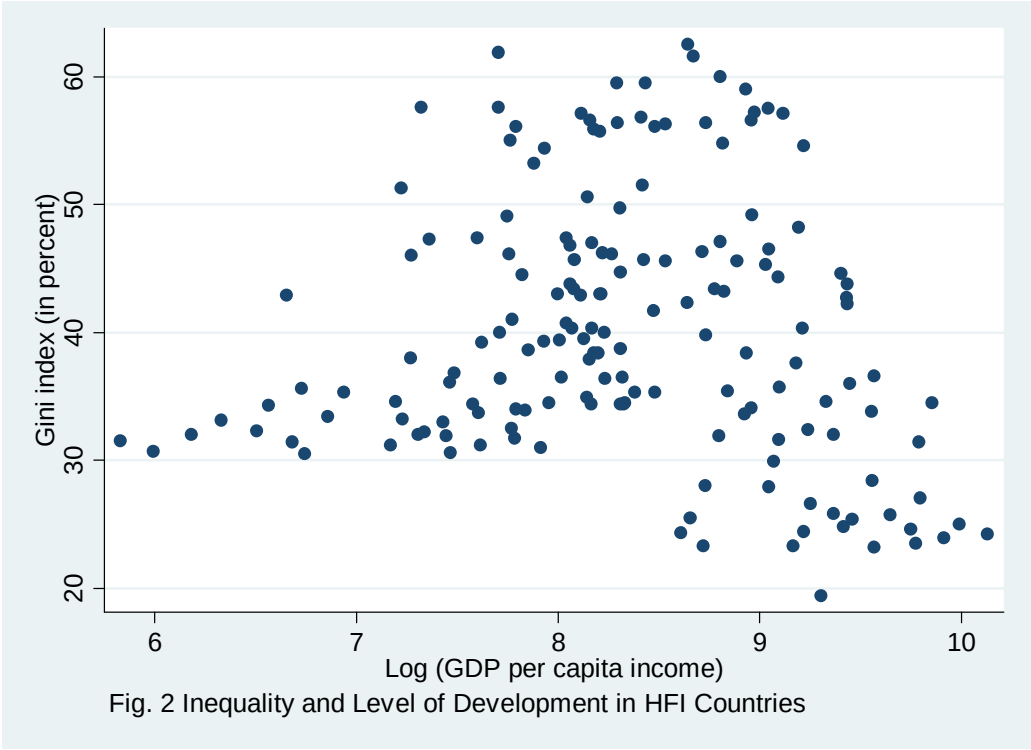


Fig. 2 Inequality and Level of Development in HFI Countries

Figure 5-2: Inequality and Level of Development in HFI Countries

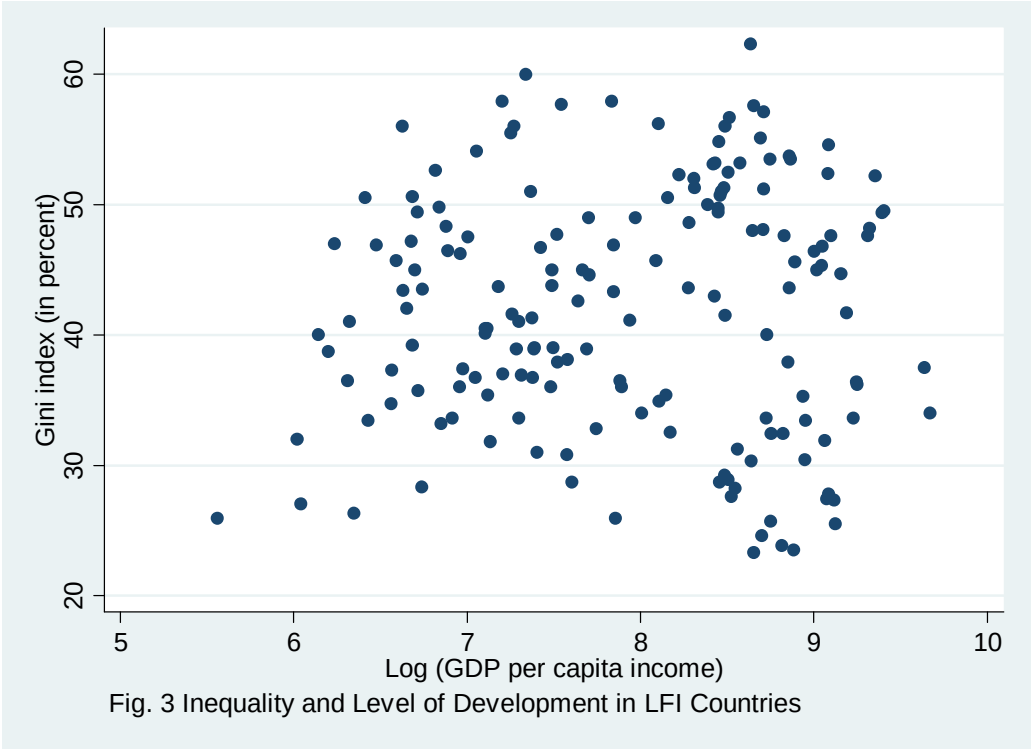


Fig. 3 Inequality and Level of Development in LFI Countries

Figure 5-3: Inequality and Level of Development in LFI Countries

Table 5-1: Description of Variables

Variable name	Definitions and Sources
Per capita real GDP	Per capita real GDP growth rates are annual averages between two survey years and are derived from the IMF, WDI and International Financial Statistics (IFS) databases.
Gini coefficient	This is a measure of income inequality based on the Lorenz curve, which plots the share of population against the share of income received and has a minimum value of zero (reflecting perfect equality) and a maximum value of one (reflecting complete inequality). The inequality data (Gini coefficient) are derived from World Bank data, UNDP and the IMF staff reports.
Secondary school enrolment	The secondary school enrolment as % of age group at the beginning of the period. It is used as a proxy of investment in human capital and derived from World Bank database.
Inflation	Inflation rates, annual averages between two survey years, are calculated using the IFS's CPI data.
Credit as % of GDP	Credit as a % of GDP represents claims on the non-financial private sector/GDP and is derived from the 32d line of the IFS.
M2 as % of GDP	This represents Broad money/GDP, and is derived from lines 34 plus 35 of the IFS.
Trade liberalization	This is the sum of exports and imports as a share of real GDP. Data on exports, imports and real GDP are in the form of annual averages between survey years.
HFI	This is the level of Financial Intermediation and is determined by adding M2 as a % of GDP and credit to private sector as % of GDP.
FDI	It is measured as net inflow of foreign direct investment as % of GDP and series have been derived form WDI.
Poverty	Measured as head count ratio and the data has been derived from World Bank.

Table 5-2: Descriptive Statistics in Developing Countries

Variable	Mean	Std. Dev.	Min	Max
Economic Growth	2.52	3.80	-10.00	13.19
Income Inequality	41.06	9.86	19.40	62.50
Log (Income Inequality)	3.68	0.25	2.97	4.14
Human Capital	60.23	23.42	16.00	105.83
Population	1.46	1.14	-1.00	4.20
Government Spending	21.26	8.98	5.18	56.00
Investment	22.48	6.03	7.00	45.00
Inflation	22.87	38.73	-1.00	310.00
GDP Per Capita	8.12	0.93	5.56	10.13
Poverty	28.01	19.65	0.00	74.00
High Financial Intermediation	64.96	38.55	10.00	250.37
Openness to Trade	71.35	38.70	10.80	228.88
FDI	2.91	5.66	-1.33	81.35

Table 5-3: Descriptive Statistics in HFI Countries

Variable	Mean	Std. Dev.	Min	Max
Economic Growth	3.08	3.23	-6.80	9.68
Income Inequality	40.19	10.25	19.40	62.50
Log (Income Inequality)	3.66	0.26	2.97	4.14
Human Capital	63.38	21.05	20.00	105.83
Population	1.46	1.05	-1.00	4.20
Government Spending	22.11	9.55	6.29	56.00
Investment	24.56	5.79	12.94	40.78
Inflation	16.40	30.28	0.47	200.00
GDP Per Capita	8.33	0.86	5.83	10.13
Poverty	20.29	14.59	0.00	63.80
High Financial Intermediation	88.98	39.13	26.00	250.37
Openness to Trade	77.23	43.20	13.05	228.88
FDI	2.73	3.44	-1.33	26.83

Table 5-4: Descriptive Statistics in LFI Countries

Variable	Mean	Std. Dev.	Min	Max
Economic Growth	1.94	4.25	-10.00	13.19
Income Inequality	42.03	9.32	23.30	62.30
Log (Income Inequality)	3.71	0.23	3.15	4.13
Human Capital	56.92	25.33	16.00	101.69
Population	1.46	1.24	-1.00	3.30
Government Spending	20.37	8.29	5.18	45.90
Investment	20.30	5.50	7.00	45.00
Inflation	29.63	45.07	-1.00	310.00
GDP Per Capita	7.91	0.94	5.56	9.67
Poverty	36.17	21.03	1.00	74.00
High Financial Intermediation	40.15	15.20	10.00	83.00
Openness to Trade	64.93	31.87	10.80	172.90
FDI	3.10	7.24	-0.19	81.35

Table 5-5: Simple Correlation Matrix for Developing Countries

	Gro	Ineq	HK	Pop	G	Inv	Inf	PCY	Pov	HFI	Open	FDI
Growth	1.00											
Inequality	0.01	1.00										
HK	-0.05	-0.16	1.00									
Population	0.14	0.34	-0.66	1.00								
Govt	-0.32	-0.28	0.40	-0.44	1.00							
Investment	0.41	0.08	0.22	-0.08	-0.07	1.00						
Inflation	-0.51	0.13	0.21	-0.32	0.13	-0.19	1.00					
PCY	-0.08	0.14	0.54	-0.40	0.40	0.19	0.07	1.00				
Poverty	-0.14	-0.13	-0.43	0.21	-0.29	-0.31	0.09	-0.72	1.00			
HFI	0.27	0.04	0.17	0.02	0.11	0.57	-0.30	0.36	-0.50	1.00		
Openness	-0.07	0.08	0.22	-0.08	0.23	0.33	-0.14	0.18	-0.13	0.30	1.00	
FDI	-0.02	0.09	0.22	-0.25	0.16	0.13	0.02	0.13	0.06	-0.01	0.37	1.00

Table 5-6: Inequality in Developing Countries

Independent Variables	Dependent Variable: Income Distribution				
Per Capita GDP	1.38 (6.86)*	1.46 (6.73)*	1.54 (7.24)*	1.40 (6.65)*	1.42 (6.71)*
Per capita GDP squared	-.09 (-6.81)*	-0.085 (-6.30)*	-0.09 (-6.78)*	-0.08 (-6.22)*	-0.081 (-6.24)*
Human Capital		-0.0004 (-0.46)	-0.001 (-1.29)		-0.001 (-1.29)
High Financial Intermediation		-.001 (-2.81)*	-.001 (-2.85)*	-.001 (-1.94)**	-.001 (-1.93)**
Population		0.13 (7.97)*	0.12 (6.54)*	0.12 (9.73)*	0.11 (7.04)*
Government Expenditure			-0.005 (-4.05)*	-0.006 (-4.58)*	-0.006 (-4.72)*
Inflation				0.001 (3.49)*	0.001 (3.44)*
Constant	-1.65 -(2.02)	-2.65 (-2.03)*	-2.79 (-3.28)*	-2.33 (-2.76)*	-2.35 (-2.78)*
F Stat	24.74	29.49 (0.000)	31.14 (0.000)	34.14 (0.000)	29.49 (0.000)
R Square	0.13	0.38	0.42	0.44	0.45

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-7: Inequality in Developing Countries using Alternative Econometric Techniques

Independent Variables	Dependent Variable: Income Distribution					
	2SLS	2SLS	LIML	LIML	GMM	GMM
Per Capita GDP	1.99 (6.83)*	1.87 (6.35)*	1.99 (6.81)*	1.88 (6.35)*	2.02 (6.01)*	1.82 (5.43)*
Per capita GDP squared	-0.114 (-6.42)*	-0.12 (-5.99)*	-0.114 (-6.40)*	-0.11 (-5.98)*	-0.11 (-5.67)*	-0.10 (-5.10)*
Human Capital	-.002 (-1.90)**	-.0001 (-1.30)	-.002 (-1.92)**	-.0001 (-1.27)	-.002 (-2.16)*	-.001 (1.40)
High Financial Intermediation	-.002 (-3.15)*	-.001 (-2.48)*	-.001 (-3.17)*	-.001 (-2.50)*	-.001 (-3.12)*	-.001 (-2.66)*
Population	.111 (5.65)*	.12 (5.93)*	.111 (5.63)*	.12 (5.93)*	0.12 (6.88)*	0.12 (6.86)*
Government Expenditure	-0.007 (-3.13)*	-0.006 (-2.75)*	-0.007 (-3.15)*	-0.006 (-2.73)*	-0.006 (-2.93)	-0.007 (-2.88)
Inflation		0.001 (2.06)**		0.001 (2.05)**		0.001 (2.56)*
Constant	-4.77 (-4.00)*	-4.36 (-3.61)*	-4.77 (-3.99)*	-4.37 (-3.61)*	-4.90 (-3.57)	-4.13 (-3.01)
Wald	144.51 (0.000)	159.55 (0.000)	144.56 (0.000)	159.72 (0.000)	199.67 (0.000)	215.41 (0.000)
Sargan	5.56 (0.06)	4.66 (0.10)	5.71 (0.06)	4.77 (0.10)		
Basmann	5.46 (0.07)	4.53 (0.10)	2.74 (0.07)	2.27(0.10)		
Hansen J					7.12 (0.03)	4.46 (0.10)
R Square	0.40	0.42	0.40	0.42	0.41	0.42
Countries	65	65	65	65	65	65

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-8: Inequality and Globalisation (Openness to trade) in Developing Countries

Independent Variables	Dependent Variable: Income Distribution							
	2SLS	2SLS	LIML	LIML	GMM	GMM	System-GMM	Sys-GMM Collapse
Per Capita GDP	1.97 (6.73)*	1.87 (6.34)*	1.97 (6.73)*	1.87 (6.34)*	2.00 (5.98)*	1.83 (5.44)*	1.40 (4.93)*	1.16 (2.90)*
Per capita GDP squared	-0.11 (-6.32)*	-0.106 (-5.97)*	-0.112 (-6.33)*	-0.106 (-5.96)*	-0.11 (-5.63)*	-0.10 (-5.11)*	-0.076 (-4.35)*	-0.058 (-2.36)*
Openness	-0.0003 (-0.80)	-0.0002 (-0.49)	-0.0003 (-0.77)	-0.0002 (-0.47)	-0.0004 (-0.85)	-0.000 (-0.32)	0.000 (0.31)	0.001 (1.44)
High Financial Intermediation	-.001 (-2.70)*	-.001 (-2.26)*	-.001 (-2.72)*	-.001 (-2.29)*	-.001 (-2.56)*	-.001 (-2.36)*	-.001 (-1.22)	-.001 (-1.77)***
Population	.11 (5.60)*	.12 (5.90)*	.11 (5.58)*	.12 (5.90)*	.13 (6.76)*	.12 (6.83)*	.16 (4.75)*	.13 (2.03)*
Inflation		0.001 (1.91)***		0.001 (1.91)***	0.001 (2.33)*	0.001 (2.33)*	0.002 (4.31)*	0.002 (2.00)**
Human Capital	-0.001 (-1.75)***	-0.001 (-1.19)	-0.002 (-1.77)***	-0.001 (-1.19)	-0.002 (-2.01)	-0.001 (-1.37)	-0.003 (-1.60)***	-0.008 (-2.42)*
Government Expenditure	-0.006 (-2.91)*	-0.006 (-2.55)*	-0.006 (-2.92)*	-0.006 (-2.53)*	-0.006 (-2.76)*	-0.006 (-2.75)*	-0.009 (-3.90)*	-0.018 (-5.89)*
Wald	147.59 (0.000)	160.93 (0.000)	147.60 (0.000)	161.06 (0.000)	204.98 (0.000)	218.60 (0.000)	153.56 (0.000)	78.37 (0.000)
Sargan	5.28 (0.07)	4.58 (0.10)	5.41 (0.06)	4.58 (0.10)				
Basmann	5.15 (0.08)	4.43 (0.10)	2.59 (0.08)	4.43 (0.10)				
Hansen J					6.72 (0.04)	4.52 (0.10)	58.06 (1.0)	34.51 (0.39)
AR (2)							(0.33)	(0.88)
Hansen dif							56.63 (0.86)	56.63 (0.50)
R square	0.41	0.43	0.41	0.43	0.41	0.43		
Country	65	65	65	65	65	65	65	65

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero.
The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-9: Inequality and Globalisation (FDI) in Developing Countries

Independent Variables	Dependent Variable: Income Distribution						
	2SLS	2SLS	LIML	LIML	GMM	GMM	System-GMM
Per Capita GDP	2.07 (6.81)*	1.94 (6.25)*	2.10 (6.71)*	1.94 (6.22)*	2.12 (6.13)*	1.90 (5.26)*	1.33 (3.60)*
Per capita GDP squared	-0.12 (-6.42)*	-0.11 (-5.92)*	-0.12 (-6.34)*	-0.11 (-5.89)*	-0.12 (-5.76)*	-0.11 (-4.92)*	-0.073 (-3.17)*
FDI	0.018 (2.26)*	0.025 (3.04)*	0.021 (2.36)*	0.025 (3.07)*	0.012 (1.50)	0.022 (2.34)*	0.011 (2.44)*
High Financial Intermediation	-0.001 (-3.03)*	-0.001 (-2.16)*	-0.001 (-3.04)*	-0.001 (-2.16)*	-0.001 (-2.89)	-0.001 (-2.18)	-0.001 (-1.36)
Population	0.12 (5.36)*	0.15 (6.53)*	0.13 (5.77)*	0.15 (6.52)*	0.13 (6.57)*	0.15 (7.06)*	0.18 (5.44)*
Inflation		0.002 (2.67)*		0.002 (2.67)*	0.002 (3.46)*	0.002 (3.46)*	0.002 (4.55)*
Human Capital	-0.002 (-1.75)***	-0.001 (-0.81)	-0.002 (-1.73)***	-0.001 (-0.79)	-0.002 (-1.86)	-0.001 (-0.71)	-0.002 (-0.94)
Government Expenditure	-0.006 (-2.76)	-0.005 (-2.13)	-0.006 (-2.61)	-0.005 (-2.09)	-0.006 (-2.33)**	-0.005 (-1.94)**	-0.009 (-4.13)**
Wald	142.18 (0.000)	156.07 (0.000)	138.04 (0.000)	154.80 (0.000)	192.46 (0.000)	202.75 (0.000)	175.75 (0.000)
Sargan	9.99 (0.01)	1.91 (0.38)	10.32 (0.01)	1.912 (0.38)			
Basman	9.99 (0.01)	1.83 (0.40)	4.93 (0.01)	0.92 (0.40)			
Hansen J					10.72 (0.01)	1.19 (0.55)	1.19 (0.55)
AR (2)							(0.49)
Hansen dif							59.30 (0.79)
R	0.38	0.38	0.36	0.37	0.39	0.39	0.39
Country	65	65	65	65	22	22	22

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-10: Inequality in High Financial Intermediation (HFI) Countries using Alternative Econometrics Techniques

Independent Variables	Dependent Variable: Income Distribution			
	2SLS	2SLS	GMM	GMM
Per Capita GDP	3.85 (6.66)*	3.52 (6.25)*	3.42 (5.95)*	1.82 (5.43)*
Per capita GDP squared	-0.22 (-6.47)*	-0.20 (-6.06)*	-0.20 (-5.79)*	-0.10 (-5.10)*
Human Capital	-.003 (-1.85)**	-.002 (-1.46)	-.002 (-1.39)	-.001 (1.40)
HFI	-.001 (-1.60)*	-.0002 (-0.53)*	-.0002 (-0.42)	-.001 (-2.66)*
Population	.084 (2.93)*	.097 (3.38)*	0.092 (3.56)*	0.12 (6.86)*
government expenditure	-0.009 (-2.88)*	-0.006 (-2.75)*	-0.008 (-2.65)	-0.007 (-2.88)
Inflation		0.002 (3.05)**	.002 (4.43)*	0.001 (2.56)*
Constant	-12.75 (-5.27)*	-11.5 (-4.90)*	-11.03 (-4.62)	-4.13 (-3.01)
Wald	90.73 (0.000)	159.55 (0.000)	140.05 (0.000)	215.41 (0.000)
Sargan	2.32 (0.31)	6.96 (0.04)		
Basmann	2.17 (0.34)	6.76 (0.03)		
Hansen J			4.09 (0.12)	4.46 (0.10)
R Square	0.48	0.53	0.53	0.42
Countries	29	29	29	29

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-11: Inequality and Globalisation (Openness to trade) in High Financial Intermediation (HFI) Countries

Independent Variables	Dependent Variable: Income Distribution			
	2SLS	2SLS	GMM	GMM
Per Capita GDP	2.67 (7.00)*	2.52 (6.91)*	2.70 (7.90)*	2.54 (7.57)*
Per capita GDP squared	-0.15 (-6.69)*	-0.145 (-6.62)*	-0.16 (-7.60)*	-0.146 (-7.26)*
Openness	-0.0007 (-1.52)	-0.0002 (-0.35)	-0.0007 (-1.54)	-0.0002 (-0.47)
Population	0.082 (3.73)*	.082 (3.97)*	0.082 (3.84)*	.082 (4.00)*
Inflation		0.002 (3.78)*		0.002 (5.91)*
Human Capital	-0.002 (-1.47)	-0.002 (-1.41)	-0.002 (-1.73)***	-0.001 (-1.37)
Government Expenditure	-0.005 (-2.92)*	-0.007 (-3.74)*	-0.005 (-3.00)*	-0.002 (-1.65)*
Wald	110.02 (0.000)	136.78 (0.000)	121.77 (0.000)	236.76 (0.000)
Sargan	0.95 (0.33)	0.72 (0.39)		
Basmann	0.91 (0.34)	0.69 (0.41)		
Hansen J			1.42 (0.23)	1.05 (0.10)
R square	0.45	0.50	0.45	0.50
Country	29	29	29	29

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-12: Inequality and Globalisation (FDI) in High Financial Intermediation (HFI) Countries

Independent Variables	Dependent Variable: Income Distribution			
	2SLS	2SLS	GMM	GMM
Per Capita GDP	2.71 (6.83)*	2.53 (6.68)*	2.74 (7.42)*	2.54 (7.11)*
Per capita GDP squared	-0.16 (-6.59)*	-0.15 (-6.45)*	-0.16 (-7.24)*	-0.147 (-6.87)*
FDI	0.008 (0.93)	0.014 (1.61)***	0.007 (0.73)	0.012 (1.31)
Population	0.0825 (3.53)*	.096 (4.15)*	0.084 (3.14)*	.095 (3.62)*
Inflation		0.002 (4.28)*		0.002 (7.14)*
Human Capital	-0.003 (-1.94)***	-0.002 (-1.64)***	-0.003 (-2.19)*	-0.002 (-1.80)***
Government Expenditure	-0.005 (-2.42)*	-0.005 (-3.15)*	-0.005 (-2.59)*	-0.006 (-3.15)*
Wald	103.28 (0.000)	132.49 (0.000)	111.38 (0.000)	207.22 (0.000)
Sargan	0.85 (0.35)	0.58 (0.45)		
Basmann	0.81 (0.37)	0.54 (0.46)		
Hansen J			1018 (0.28)	0.71 (0.39)
R square	0.43	0.49	0.44	0.50
Country	29	29	29	29

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-13: Inequality and Globalisation (Openness to trade) in Low Financial Intermediation (LFI) Countries

Independent Variables	Dependent Variable: Income Distribution			
	2SLS	2SLS	GMM	GMM
Per Capita GDP	0.98 (3.45)*	0.90 (3.19)*	0.90 (3.30)*	0.86 (3.15)*
Per capita GDP squared	-0.056 (-3.10)*	-0.050 (-2.84)*	-0.05 (-2.99)*	-0.048 (-2.84)*
Openness	-0.000 (-0.15)	0.000 (0.15)	0.000 (-0.19)	0.000 (0.03)
Population	0.123 (5.14)*	.132 (5.46)*	.13 (4.95*	.13 (5.40)*
Inflation		0.0006 (1.92)***		0.0006 (2.25)**
Human Capital	0.000 (0.49)	0.0007 (0.66)	0.0005 (0.50)	0.0007 (0.66)
Government Expenditure	-0.006 (-3.23)*	-0.007 (-3.65)*	-0.006 (-3.41)*	-0.007 (-3.82)*
Wald	127.27 (0.000)	134.67 (0.000)	165.49 (0.000)	187.36 (0.000)
Sargan	1.89 (0.16)	0.73 (0.39)		
Basmann	1.80 (0.18)	0.68 (0.40)		
Hansen J			1.85 (0.17)	0.86 (0.35)
R square	0.50	0.51	0.50	0.51
Country	36	36	36	36

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-14: Inequality and Globalisation (FDI) in Low Financial Intermediation (LFI) Countries

Independent Variables	Dependent Variable: Income Distribution			
	2SLS	2SLS	GMM	GMM
Per Capita GDP	0.80 (2.65)*	0.66 (2.18)**	0.67 (2.32)*	0.58 (1.96)***
Per capita GDP squared	-0.043 (-2.29)*	-0.034 (-1.80)***	-0.035 (-1.94)***	-0.030 (-1.60)***
FDI	0.012 (1.00)	0.016 (1.47)	0.014 (1.14)	0.019 (2.30)
Population	0.13 (5.08)*	0.14 (5.57)*	.14 (5.12)*	.14 (6.23)*
Inflation		0.000 (2.88)*		0.000 (3.58)*
Human Capital	0.000 (0.11)	0.000 (0.31)	0.000 (0.16)	0.000 (0.30)
Government Expenditure	-0.005 (-2.57)*	-0.005 (-2.90)*	-0.004 (-2.66)*	-0.006 (-3.08)*
Wald	112.23 (0.000)	121.83 (0.000)	144.03 (0.000)	167.74 (0.000)
Sargan	6.41 (0.01)	3.28 (0.07)		
Basmann	6.33 (0.01)	3.16 (0.08)		
Hansen J			5.26 (0.02)	3.55 (0.06)
R square	0.48	0.49	0.46	0.45
Country	36	36	36	36

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-15: Poverty and Globalisation (Openness to Trade and FDI) in Developing Countries

Independent Variables	Dependent Variable: Poverty			
	2SLS	GMM	2SLS	GMM
Growth	-1.27 (-7.34)*	-1.26 (-6.32)*	-1.40 (-7.01)*	-1.39 (-6.40)*
Inequality	0.51 (3.64)*	0.50 (2.59)*	0.50 (3.13)*	0.53 (2.37)*
Inflation	0.06 (3.76)*	0.06 (3.75)*	0.053 (2.79)*	0.051 (2.37)*
Government Expenditure	-0.13 (-1.76)***	-0.135 (-2.22)**	-.15 (-1.69)***	-0.15 (-1.99)***
Openness	.038 (2.07)*	.038 (2.06)**		
FDI			1.25 (2.89)*	1.14 (2.18)*
Wald	197.46 (0.000)	144.59 (0.000)	158.41 (0.000)	126.53 (0.000)
Sargan	0.37 (0.54)		0.85 (0.65)	
Basman	0.36 (0.55)		0.81 (0.67)	
J		0.40 (0.53)		0.77 (0.68)
R	0.56	0.56	0.45	0.47
Country	65	65	65	65

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-16: Poverty and Globalisation (Openness to Trade and FDI) in High Financial Intermediation (HFI) Countries

Independent Variables	Dependent Variable: Poverty			
	2SLS	GMM	2SLS	GMM
Growth	-1.17 (-2.95)*	-1.35 (-2.98)*	-1.12 (-2.73)*	-1.27 (-2.69)*
Inequality	0.65 (1.65)***	0.52 (1.28)*	1.12 (2.64)*	1.002 (2.01)*
Human Capital	0.23 (3.55)*	0.20 (-3.76)*	-0.22 (-3.11)	-0.24 (-2.69)*
Inflation	-0.04 (-1.08)*	-0.05 (-2.99)*	-0.02 (-0.59)*	-0.02 (-1.69)***
Government Expenditure	-0.56 (-3.98)***	-0.61 (-4.33)**	-.56 (-3.64)*	-0.64 (-3.84)*
Openness	-.09 (-2.98)*	-.096 (-3.43)**		
FDI			-1.82 (-2.09)*	-1.84 (-2.12)*
Wald	65.67 (0.000)	76.48 (0.000)	57.80 (0.000)	44.86 (0.000)
Sargan	11.68 (0.00)		9.45 (0.00)	
Basman	12.51 (0.00)		9.72 (0.00)	
J Stat		11.96 (0.00)		13.26 (0.00)
R	0.50	0.49	0.48	0.47
Country	29	29	29	29

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-17: Poverty and Globalisation (Openness to Trade and FDI) in Low Financial Intermediation (LFI) Countries

Independent Variables	Dependent Variable: Poverty			
	2SLS	GMM	2SLS	GMM
Growth	-1.75 (-5.31)*	-1.63 (-4.25)*	-1.78 (-4.42)*	-1.74 (-4.58)*
Inequality	0.57 (2.85)*	0.58 (2.06)*	0.58 (2.48)*	0.58 (1.76)***
Human Capital	0.09 (1.63)	0.081 (1.34)	0.05 (0.84)	0.067 (1.14)
Inflation	0.028 (1.05)	0.033 (1.20)*	0.02 (0.68)*	0.01 (0.27)
Government Expenditure	-0.35 (-2.02)*	-0.35 (-2.05)**	-.18 (-0.92)	-0.19 (-1.30)
Openness	.098 (2.32)*	0.10 (2.10)**		
FDI			1.30 (2.00)**	1.36 (2.20)*
Wald	132.72 (0.000)	135.23 (0.000)	102.98 (0.000)	135.00 (0.000)
Sargan	1.55 (0.21)		1.16 (1.28)	
Basman	1.41 (0.23)		1.05 (0.31)	
J Stat		2.00 (0.16)		1.86 (0.17)
R	0.64	0.64	0.53	0.52
Country	36	36	36	36

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero. The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 5-18: A Comparative Summary of Inequality and Poverty Consequences of Globalisation

Countries	**Dependent Variables**			
	Income Inequality		**Poverty**	
	Globalisation Measures		**Globalisation Measures**	
	Trade Openness	**FDI**	**Trade Openness**	**FDI**
All Developing	(-) & insignificant	(+) & significant	(+) & significant	(+) & significant
HFI Countries	(-) & insignificant	(+) & insignificant	(-) & significant	(-) & significant
LFI Countries	(+) & highly insig.	(+) & sig, not robust	(+) & significant	(+) & significant

Appendix:

Table 5-19: Inequality and Interactive Effect of Trade and Development

Variables	2SLS	2SLS	2SLS	LIML	LIML	GMM	GMM	GMM
Log (per capita GDP)	1.50 (4.27)*	2.27 (7.27)*	1.41 (4.23)*	1.52 (4.28)*	1.42 (4.24)*	1.52 (4.12)*	1.43 (4.06)*	2.24 (6.84)*
Log (per capita GDP) squared	-.07 (-3.25)*	-.13 (-3.92)*	-.07 (-3.15)*	-.07 (-3.26)*	-.07 (-3.16)*	-.07 (-3.14)*	-.07 (-3.05)*	-.13 (-6.53)*
Trade Openness	0.022 (4.73)*	0.0004 (0.61)	0.023 (5.28)*	0.022 (4.72)*	0.023 (5.27)*	0.021 (3.81)*	0.022 (4.31)*	0.0004 (0.65)
Trade and Dev	-.003 (-4.79)*		-.003 (-5.43)*	-.003 (-4.77)*	-.003 (-5.41)*	-.003 (-3.87)*	-.003 (-4.46)*	
Human Capital	-0.002 (-2.11)**	-0.002 (-1.6)***	-0.002 (-2.31)**	-0.002 (-2.11)**	-0.002 (-2.32)**	-0.002 (-2.50)*	-0.002 (-2.74)*	-0.002 (-1.8)***
HFI	-.0003 (-0.93)			-.0003 (-0.94)		-.0003 (-0.95)		
Trade and HFI		-.000 (-1.83)***						0.000 (-2.11)**
Population	0.092 (5.20)*	0.11 (5.57)*	0.079 (4.90)*	0.092 (5.20)*	0.079 (4.90)*	0.091 (5.64)*	0.080 (4.78)*	0.11 (6.62)*
government expenditure	-0.006 (-3.90)*	-0.006 (-3.34)*	-0.006 (-4.29)*	-0.006 (-3.90)*	-0.006 (-4.29)*	-0.006 (-3.95)*	-0.007 (-4.20)*	-0.006 (-3.54)*
Inflation	0.001 (2.27)*	0.001 (2.24)*	0.001 (2.70)*	0.001 (2.26)*	0.001 (2.69)*	0.001 (2.89)*	0.002 (3.42)*	0.001 (2.77)*
Constant	-3.56 (-2.62)*	-6.00 (-4.69)*	-3.16 (-2.46)*	-3.58 (-2.64)*	-3.19 (-2.48)*	-3.55 (-2.54)*	-3.19 (-2.35)*	-5.88 (-4.36)*
Wald	227.52 (0.000)	165.83 (0.000)	227.01 (0.000)	227.57 (0.000)	227.10 (0.000)	269.93 (0.000)	241.56 (0.000)	241.38 (0.000)
Sargan	1.91 (0.17)	1.61 (0.21)	2.21 (0.14)	1.93 (0.16)	2.24 (0.13)			
Basmann	1.83 (0.18)	1.54 (0.21)	2.13 (0.14)	1.84 (0.18)	2.14 (0.15)			
Hansen						1.35 (0.25)	1.62 (0.20)	1.06 (0.30)
Countries	65	65	65	65	65	65	65	65
R Square	0.50	0.41	0.50	0.50	0.50	0.50	0.50	0.41

F-statistics and associated p-values are reported for the test of all slope parameters jointly equal to zero.
The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

6. Growth, Inequality, Trade and Credit Market Imperfections: A Cross Country Analysis

6.1. Introduction

The 20th century saw uneven improvement in living standards of people in different parts of the world. According to the World Bank (2001b), poverty has declined over the past twenty years but the progress has been unequal. The number of people living below poverty line fell from 1.5 billion in 1981 to 1.1 billion in 2001. Despite this development, many countries are still facing the problem of poverty and suffering from the vicious circle of the poverty trap. Poverty in Sub-Saharan Africa rose from 41 % to 46% over the period 1981-2001, while in Eastern Europe and Central Asia poverty increased to 20% in 2001. Hence, reducing poverty has become an important challenge for developing countries.

Economic growth is considered to be a powerful, key force which can significantly reduce poverty incidence as rapid and sustained growth creates employment opportunities and high wage rates. Nevertheless, the extent of poverty reduction in response to growth primarily depends on two factors: initial level of income inequality, and response of inequality to growth. As mentioned previously, in Chapter Five, economic growth can affect inequality in either direction depending upon the levels of economic development. If income inequality increases in response to high economic growth then poverty may not fall to a significant level. A number of developing countries witnessed high growth levels in various periods but poverty still exists since inequalities have also increased. For instance, most South and East Asian economies have grown at a high rate since the 1970s, together with moderate level of inequality, although this has increased over time. On the other hand, Latin American countries growth rates are less than half of the average growth rates of South and East Asian economies while high inequality is maintained. The differences in inequality at a given rate of growth show that various combinations of polices and institutions across countries have an effect on inequality. It can be argued that linking poverty to economic growth will not serve the purpose, but poverty reduction requires a combination of high growth rates and policies which ensure less inequality.

This study attempts to investigate deep predictors of cross-country growth differences with a particular focus on the role of inequality and trade. However, the question arises as to why re-investigation of the relationship between growth, inequality and trade is necessary in the presence of a vast body of literature in this particular area. The motivation for this particular piece of work is manifold. First, growth, inequality and trade relationships are central to macroeconomic policies and, most importantly, these variables are important for poverty reduction in low-income developing countries. Second, the available evidence on the growth effects of inequality and trade does not provide a definite relationship. Third, relationships depend on the availability of long series of data. Fourth, recently, literature has begun to point out that growth effects of trade are not necessarily positive. However, most of these studies identify various mechanisms to support the adverse growth effects of trade by making a distinction between developed and developing countries, where effects are favourable in the case of developed countries and detrimental in the case of developing countries. We argue that such a differentiation within developing countries will be more useful, as developing countries in general, and those within same group of development in particular, share similar characteristics. In other words, it will be more useful to assess whether inequality and trade effects of growth vary between developing countries. Does it matter if a country belongs to a group of low-income developing countries or high-income developing countries? If the answer to this question is yes, then it would be interesting to determine those characteristics which make possible such a distinction and to formulate policy action for other developing countries which lack these characteristics.

Theoretical and empirical research into the effect of economic growth on inequality has produced very mixed results. On the one hand, theoretical studies by Kaldor (1957), Saint-Paul and Verdier (1993) and Galor and Tsiddon (1997a, 1997b) predict a positive growth impact of inequality through incentives, physical capital accumulation, saving rates or investment indivisibility mechanism. On the other hand, theoretical studies by Galor and Zeira (1993), Alesina and Rodrik (1994), Persson and Tabellini (1994), and de la Croix and Doepke (2003) predict a negative growth impact of inequality. The negative growth impact of inequality comes about through socio-political instability, imperfections in credit markets, fiscal redistribution and distortion, and fertility differential channels. Thus, extant theoretical literature does not provide a definite relationship between inequality and growth.

Similarly, on the empirical side, findings on the growth impact of inequality are also mixed, at best. On the one hand, Partridge (1997), Li and Zou (1998), Forbes (2000), and Lundberg and Squire (2003) provide empirical evidence that the growth impact of inequality is positive, while, on the other hand, Alesina and Rodrik (1994), Persson and Tabellini (1994), Wan, Lu and Chen (2006), and Sukiassyan (2007) provide empirical evidence that the growth effect of inequality is negative. However, Barro (2000) shows that the growth impact of inequality is insignificant in a large sample of both developed and developing countries.

Growth-inequality nexus might be better characterised using a non-linear relationship. For instance, Voitchovsky (2005) finds that the growth effect of inequality is positive at the top quantiles of distribution while it is negative at the lower end of the distribution. Fallah and Partridge (2007) argue that the growth effect of inequality varies between urban and non-metro samples. They found that the effect of inequality on growth was positive in the urban sample while the effect appeared to be negative in the non-metro sample. Furthermore, Bjornskov (2008) claims that inequality is good for economic growth under right-wing governments while growth-inequality nexus appears to be negative under left-wing governments.

We argue that inequality can be viewed as a "natural phenomenon" or at least we can expect it to be natural in the context of a market-based economic system. In a market economy, income differentials of individuals depend, at least to some extent, on their marginal productivities and comparative advantages. Long ago, Rousseau (1755) declared that inequalities among individuals were set when ancient man left the natural state and developed the first society.

In the same century, Adam Smith observed that differences among individuals which are responsible for inequalities are intrinsic parts of economic systems. He argued that the division of labour, instead of the inherent characteristics of individuals, causes "the very different genius which appears to distinguish men of different professions" (Smith, 1776, p. 15-16).

In this way, Schumpeter views incentives that determine economic performance of individuals and their rewards. The distribution of economic awards, however, is not random but depends on skill, energy and work capacity. Nevertheless, if it is important to measure a personal input

or skill that generates a particular success then in fact paid rewards may be viewed as uneven. Therefore inequality tends to exist and prevail than a more fair distribution (Schumpeter, 1942, p.109).

There can be many reasons for the existence of a natural inequality in a society ranging from structural conditions (such as land distribution and rural urban conditions) to more endogenous conditions (such as characteristics intrinsic to individuals). Intellectual attributes (such as intelligence and innate abilities) and physical attributes (such as strengths and skills) are the most fundamental characteristics which determine variations in the marginal productivity of individuals and their incomes. If we believe that a moderate level of inequality is a natural and even necessary phenomenon in a market economy then another question arises as to what is the optimal level of inequality or, put in another way, what level of inequality is detrimental to economic growth. The answer to this question requires an exclusive control for non-linearity in the growth-inequality relationship. This study empirically tests the presence of such an optimal level of inequality for a large set of developing countries.

This study argues that the non-linear nature of the growth-inequality relationship is more likely to exist in developing countries as the theoretical channels predicting adverse effects of inequality (e.g., political instability, social unrest, market imperfections and fertility mechanisms) are more common in developing countries. Furthermore, mechanisms predicting positive growth effects of inequality are more likely to prevail in low-income developing countries. A moderate level of inequality is a natural phenomenon because individuals differ naturally in their abilities in terms of work and income. In particular, hard work, consistency and commitment are the key factors that derive an individual's economic performance and their incomes. In sum, inequalities are acceptable up to a moderate level and positive dynamics of inequality dominate up to a certain level of inequality. However, once this level is crossed, negative dynamics of inequality begin to prevail.

International trade is another important factor which plays a critical role in determining cross-country variations in growth. Assessing growth performance in an open economy is an issue of considerable debate and interest. However, neither theoretical nor empirical studies have

provided a definite conclusion about the growth impact of trade (see, for example, Edwards, 1993; Lopez, 2005 for further details).

Theoretical research on growth and trade suggests that long-term economic growth may benefit from increased international trade. Trade facilitates technological advancement in importing countries as imports of high technological goods are potential source of diffusion of knowledge and technology (see, for example, Grossman and Helpman 1990, 1991; Rivera-Batiz and Romer, 1991; Barro and Sala-i-Martin, 1997; and Baldwin et al., 2005). Some other theoretical studies argue that openness to trade extends market size that allows countries to better capture economies of scale (Romer, 1989; Ades and Glaeser, 1999; Alesina et al., 2000; and Bond et al., 2005). A high degree of foreign competition exerts pressure on governments to commit to reform programs (Sachs and Warner, 1995; Rajan and Zingales, 2003).

Some theoretical studies, on the other hand, suggest a negative impact of increased trade on economic growth. If some economies specialise in sectors with comparative disadvantage in R&D then improvements in R&D efficiency or increase in global resources need not increase the steady-state growth rate (Grossman and Helpman, 1990, 1991). In this respect, Redding (1999) points out that trade openness might contribute adversely to long-run growth, if an economy specialises in those sectors where dynamic comparative disadvantages hold. Similarly, trade might contribute negatively to long-run growth if economies specialise in those sectors where learning by doing and innovation opportunities have largely been exhausted (Lucas, 1988; Young, 1991). In such a type of economy, protection in selected sectors can foster long-term economic growth.

In addition, theoretical models of technological diffusion suggest that the relationship between trade and growth is dissimilar for countries at different stages of economic development. Although trade facilitates the diffusion of innovations, knowledge and technology, adoption of the technology depends on the absorptive capacity of a country which depends on human capital (Cohen and Levinthal, 1989; Benhabib and Spiegel, 2005), research and development (Verspagen, 1991; Fagerberg, 1994), or financial sector development (Aghion et al., 2005). Countries with better human capital and mature financial systems are in a better position to take full advantage of technology transfer.

Among domestic factors, the role and importance of inequality is central in determining growth, where as in an open economy the role and importance of trade is critical in determining growth. Many theoretical and empirical studies have shown that trade openness is beneficial for growth. However, in recent years, the literature has begun to indicate that the growth effects of trade are not necessarily positive. Nevertheless, adverse growth effects of trade are not directly blamed on the trade; there are domestic conditions such as human capital, mature financial systems, and stable policies which determine the growth effects of trade.

High inequality in some societies is closely linked to the domestic conditions of the economy. In fact, high inequality is a deeper cause of many adverse domestic conditions such as lack of investment in human capital, policy instability and fertility differentials. So the natural question to ask is whether the growth effects of trade depend on the prevalence of high inequalities in developing counties. Such a distinction is necessary because more segregated societies find it difficult to manage collective actions and sound macroeconomic polices. To best of our knowledge, such a distinction has been virtually ignored in the current literature. We assess the role and importance of initial inequality in determining the growth effects of trade and find substantial empirical support that the growth effect of trade varies between less and more unequal societies.

Theoretical literature suggests that in countries where income inequalities are high, investment in human capital remains low because the poor do not have sufficient collateral to finance investment in human capital (Galor and Zeira, 1993; Fisherman and Simhon, 2002). Similarly, theoretical models suggest that high income inequalities are grounded in social conflicts, macroeconomic instability, low investment in human capital, an unskilled labour force and weak financial institutions (Persson and Tabellini (1994); Alesina and Perotti (1996); Alesina and Rodrigo (1994); Keefer and Knack (2000); Baumol (2007)). These socio-economic conditions hamper the absorptive capacity of a country to take a full advantage of technological transfer.

Societies which face a high level of income inequalities also face problems in collective actions and coordinated macroeconomic polices. Theoretical studies argue that it is difficult to manage collective actions in more unequal societies that are possibly characterised by political

instability, a tendency towards redistributive policies, or high volatility in policies (Persson and Tabellini, 1994; Alsenia and Rodrick, 1994). Since more unequal societies restrict well-coordinated macroeconomic policies, it is likely that these societies also restrict the ability of a country to take full advantage of foreign competition.

Recently, the literature has identified that complementary policy reforms play an important role in determining favourable growth effects of trade. Chang et al. (2009) illustrate with a simple Harris-Todaro model that labour market flexibility plays an important role in determining welfare gains after trade openness. They argue that the effect of trade openness on growth depends on complementary policy reforms such as reforms related to financial depth, governance, labour market flexibility, and inflation stabilisation. They argue that such complementary policy reforms are helpful in taking advantage of foreign competition. Their study finds substantial empirical support for their argument from a cross-country analysis.

Inequality is good for growth only in a linear relationship while inequalities are harmful for growth after a certain point. This implies that improvement of a high degree of inequality will not only have direct benefit in the form of positive growth but may also have indirect benefit, by allowing a country to take full advantage of trade openness.

The contribution of this study is to assess whether the trade-growth relationship depends on the income distribution differences in developing countries or, more generally, whether this relation differs between countries depending on their initial level of income distribution. The interactive role of trade and income distribution has been virtually ignored in the current literature.

In addition, this study contributes in many ways to the existing literature on growth, inequality and trade. First, for this study, a new panel data set was prepared over a long period (1965-2008) for 65 developing countries using various sources of data and manual calculation. Seeking high quality data, an effort has been made to ensure that statistics are comparable across countries and over time by the use of similar definitions of variables for each country and year. The availability of long data series enabled us to test the very nature of long- term growth-inequality relationship that is missing in previous studies.

Second, this study also introduces non-linear dimensions of inequality affecting growth. This study argues that effect of inequality on economic growth is not uniform across different levels of development. Inequality is beneficial for growth in those counties where the level of development is high, while it is harmful for those counties that are at on a lower rung of development. Third, this study argues that growth benefits of trade vary substantially across developing countries and regions. In particular, success stories of East Asian countries that appear to show openness as being good for growth cannot be generalised to all developing countries (Majeed and Ahmad, 2006). Fourth, this study incorporates the role of corruption in determining the growth-inequality relationship, which is missing in existing literature.

Fifth, generally, cross-country studies examine the growth-inequality relationship with a combined sample of developing and developed countries, thereby treating them equally. This study, however, exclusively tests various hypotheses only for developing countries, keeping in view the substantial structural and socio-economic differences between developing and developed countries. We replicate the analysis for a sub-sample of countries that are members of the Organization of the Islamic Conference (OIC)[31]. According to the annual economic report on the OIC countries 2010[32], economic performance in developing OIC countries is substantially different from the rest of the developing countries. Separate regression modelling for OIC countries is useful in two ways. First, it is helpful for the analysis of robustness for all developing countries and, second, it will capture parameter differences in OIC countries.

This study adds to this emerging literature by addressing to the following questions: (1) Is inequality harmful for growth? (2) Does the effect of inequality on growth vary over the path of development and across regions? (3) Is the relationship between inequality and growth is perhaps non-linear? (4) What is the role of financial market imperfection in determining the growth-inequality relationship? (5) Does openness to trade promote economic growth equally across the developing countries or do the effects of trade liberalisation on economic growth depend on income distribution differences?

Consistent with the objectives of the study, the following hypotheses will be tested:

[31] The Organization of the Islamic Conference (OIC) is the second largest inter-governmental organisation after the United Nations which has membership of 57 states spread over four continents.

[32] http://www.sesric.org/publications-detail.php?id=159

Hypotheses 1: In the linear specification, inequality is positively correlated with economic growth. In the case of non-linear specification, a moderate level of inequality positively affects growth, while a high level of inequality is detrimental to growth.

Hypotheses 2: Other things being equal, inequality tends to be positively related to economic growth in the short term but negatively correlated in the long run.

Hypotheses 3: The independent effect of inequality and high financial intermediation tends to be positively correlated with economic growth while their combined effects are harmful for growth

Hypotheses 4: Inequality tends to be negatively related to economic growth in countries with a lower level of development but positively correlated in countries with a higher level of development, other things being equal.

Hypotheses 5: Trade is good for growth; however, its effect is substantially influenced by the domestic context in terms of prevalence of high income inequalities. Trade adversely affects growth in economies where inequalities are comparatively high.

The rest of the discussion is structured as follows. Section 2 provides a review of the related literature on growth, inequality, openness and credit market imperfection while section 3 provides a discussion of data. Section 4 presents an analytical framework for the study. Section 5 put forwards the results derived from the hypotheses and a discussion of these results. Finally, section 6 provides a conclusion.

6.2. Inequality and economic growth: theory and evidence

In this section, we discuss various theories of the growth-inequality relationship with a particular focus on the controversial nature of the relationship. A summary of the relation has been provided using flow chart. Some selected empirical studies have been summarised in Table 1. This section also includes a brief discussion on the role of credit market imperfections and trade in relationship to economic growth.

6.2.1: Channels through which inequality can affect economic growth

The literature is not yet conclusive as to whether inequality exerts a positive or negative influence on economic growth. There are different mechanisms through which inequality can affect growth. On the one hand, Kaldor (1957) predicts a positive effect of inequality on

growth. Since the marginal propensity of the rich to save is higher than that of the poor, a higher intensity of inequality increases aggregate savings which, in turn, increase capital accumulation and economic growth.

On the other hand, Persson and Tabellini (1994) and Alsenia and Rodrick (1994) predict negative growth effects of inequality using the four main channels. First, a higher degree of inequality encourages rent-seeking activities that reduce the security of property rights; second, it is difficult to manage collective actions in more unequal societies, which may be seen in political instability, a tendency towards redistributive policies, or high volatility in policies, all of which can be detrimental to growth; third, median voters in more unequal societies are relatively poor and support redistributive policies through high tax burdens; fourth, if inequality coexists with credit market imperfections then poor people may not be able to invest in human and physical capital, thereby reducing long-term growth.

Saint-Paul and Verdier (1993) examined the importance of median voters in relation to economic growth. They argue that median voters favour high taxation to finance public expenditure. Investment in public education increases human capital and economic growth. Benabou (1996) builds a theoretical model with the assumption of heterogeneous individuals to show a positive impact of inequality on growth. He demonstrates that segregated and more unequal societies, at least in the short run, can have higher rates of growth as the degree of complementarity between individuals' human capital is stronger in local interactions than in global ones. Galor and Tsiddon (1997a, b) provide two theories to support the positive relationship between growth and inequality. First, an individual's level of human capital depends on a home environment externality. In other words, an individual's human capital depends on the parents' level of education or it is an increasing function of the parents' level of education. Their model predicts that if a home environment externality is strong enough then a high degree of inequality may be a necessary condition for growth to "take off" in a less developed country. In the second model, they show that inequality increases during periods of major technological inventions which, by enhancing and the concentration of highly skilled workers in technologically advanced sectors, will generate higher rates of technological progress and growth. These aforementioned theoretical papers have received little attention in the literature on establishing a relationship between growth and inequality as the majority of studies present a negative relationship between inequality and growth.

Galor and Zeira (1993) and Fisherman and Simhon (2002) show that high inequality in the presence of imperfect capital markets means individuals face credit constraints as they lack collateral. As a result, they are not able to make an investment in human and physical capital. High inequality also causes a rise in the fertility rates and less investment in human capital.

De la Croix and Doepke (2003) argue that poor parents prefer to have more children and make less investment in their education. Such a preference leads to a lower average education in a society if the fertility differential between the rich and the poor is high. They further argue that the fertility differential, in turn, depends on income inequality. If high inequalities increase the fertility differential then societies with higher inequalities tend to accumulate less human capital, and thus grow more slowly.

Forbes (2000) found a positive relationship between inequality and growth. She argues that most likely reasons for the contradiction of results are country specific, omitted variable bias, data quality issues and length of period under consideration. In order to overcome such problems, Forbes (2000) used fixed effects and random effects models, with a sample of 45 countries whose income inequality data was deemed to be of high quality. She concluded that in the short or medium run the relationship is positive, while in the long run it is negative.

Alesina and Rodrick (1994), Persson and Tabellini (1994), Clarke (1995) found a negative relationship between growth and inequality. These studies were mainly based on the estimation of convergence equation in which the income inequality variable was added to the set of explanatory variables to explain differences in growth rates across countries. However, due to the scarcity of data on income inequality, most of these studies examined the effect of income inequality in 1960 on the average growth rate of per capita income over the period 1960-90.

Galor and Moav (1999) argue that inequality positively affects physical capital, while negatively affecting human capital accumulation in the presence of credit market constraints. In the early stages of development, returns on physical capital are high as it is scarce and the development process is driven by physical capital. The positive effect is sufficiently strong to offset the negative effect of human capital because savings are an increasing function of

wealth - higher savings increase capital accumulation and growth process. However, at later stages of the economic development, the positive effect is offset by negative effects.

Similarly, Galor (2000) argues that the classical approach to the growth-inequality relationship is valid at the early stages of economic development where physical capital is the prime engine of economic growth. Since capital is scarce in the early stages of economic development, higher savings are important in order to accumulate capital. However, at later stages of economic development, human capital becomes the main engine of growth as returns to human capital increases. Here the negative effect of inequality on human capital decreases because credit constraints are less binding to higher wages. Therefore, the effect of inequality on the growth process turns out to be insignificant.

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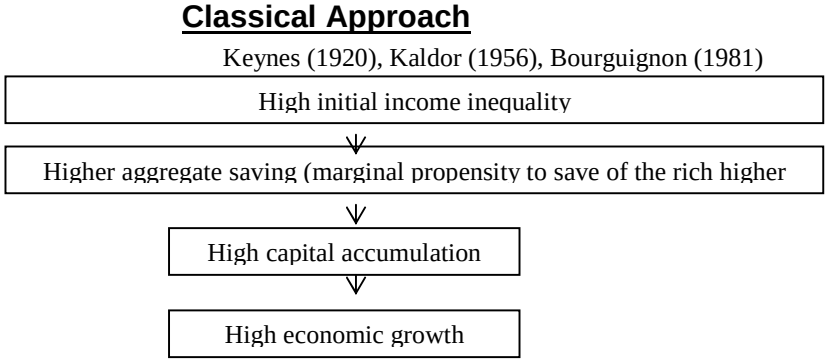
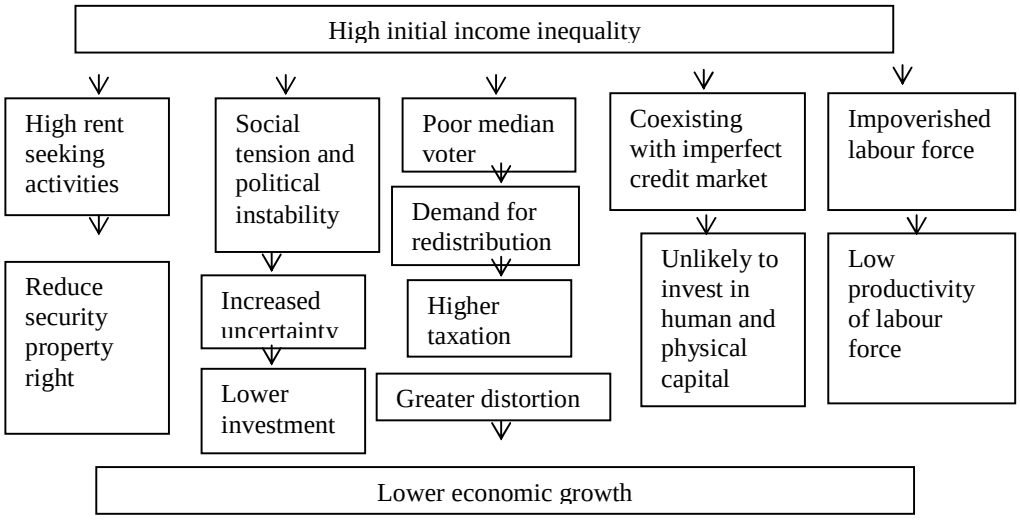
1. Description of channels through which inequality can affect growth



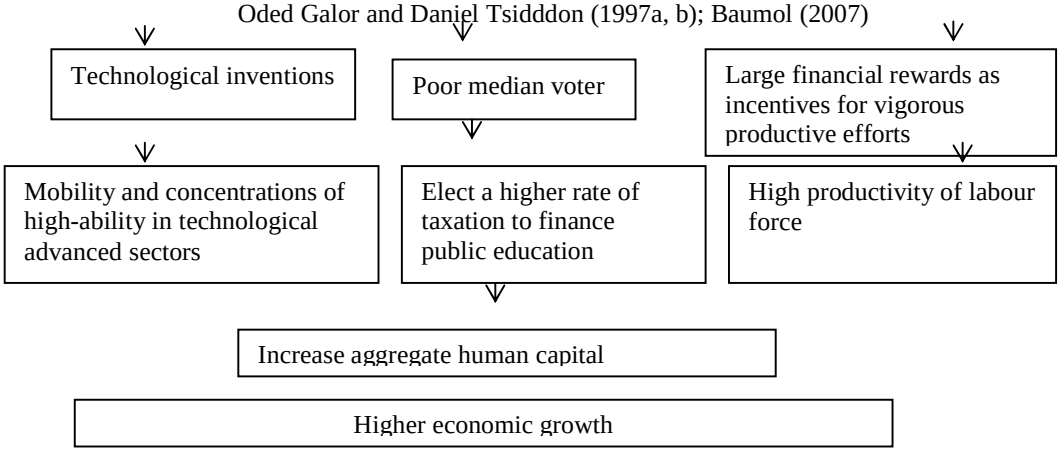
Modern Approaches: Inequality is Harmful

Persson and Tabellini (1994); Alesina and Perotti (1996); Alesina and Rodrigo (1994); Keefer and Knack (2000); Baumol (2007); Majeed (2010)

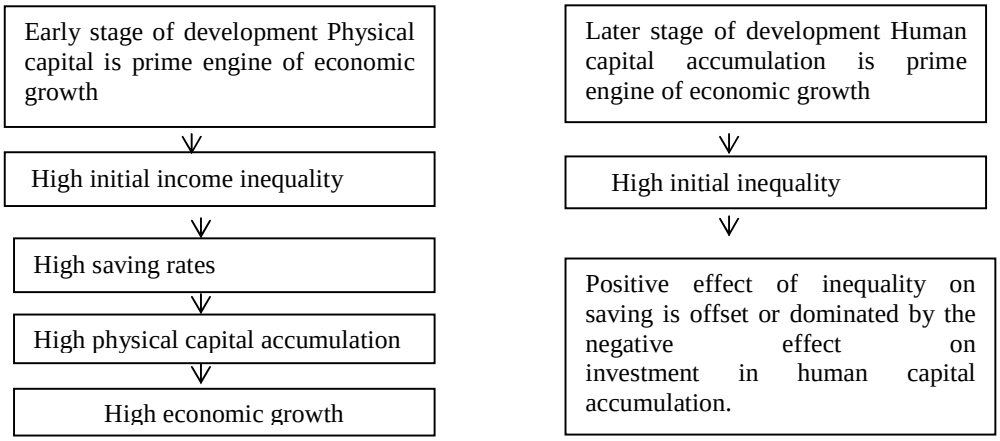


Modern Approaches: Inequality is Beneficial

Gilles Saint-Paul and Thierry Verdier (1993; Benabou (1996); Oded Galor and Daniel Tsidddon (1997a, b); Baumol (2007)



The Unified Approach: Galor (2000); Galor and Moav (2004)



6.2.2. Role of credit market imperfections

In the literature, many studies point to credit market imperfections as a likely reason for the inverse relationship between inequality and growth in the long run (Galor and Zeira, 1993; Banerjee and Newman (1993); Aghion and Bolton, 1997). In the presence of credit market imperfections, the poor are not able to borrow because of a shortage of collateral. Hence, the poor do not have same chances of financing the education of their children as do the rich. Thus, countries with high inequalities underutilise their potential for productivity and growth. Galor and Zeira (1993) and Banerjee and Newman (1993) argue that income inequality may be perpetuated in the long run in the presence of credit market imperfections and technological indivisibility. Credit market imperfections in the presence of unequal distribution of income also imply unequal opportunities of investment in the short run. This causes polarisation and polarisation is perpetuated in the long run because of assumed invisibility in investment technology. Such polarisation adversely affects long-run growth as production technology shows non-decreasing returns to scale.

Barro (2000) considers credit market imperfection as a likely reason for the positive relationship between inequality and economic growth in the short run. The exploitation of investment opportunities depends to some extent on individuals' level of income and assets when access to credit is limited. Investment in human capital, which offers relatively higher returns, is forgone by the poor. As the negative effect of decline in human capital investment on economic growth emerges over a long period of time, so it might be possible that in the short run, economic growth increases because of the dominant positive effect of investment in physical capital. However, in long run, growth rates may become negative when the negative consequences of a decline in human capital investment are sufficient to outweigh the positive growth effects of investment in physical capital.

Table 1: Summary Review of the Empirical Literature

Authors	Estimation method	Specification/ Model	Inequality effect on growth	Accounting for nonlinearities	Sample	Study period
Persson and Tabellini (1994)	OLS	Political Economy Model	Negative	No	67	1960-85
Perotti (1996)	OLS	Perotti	Negative	No	67	1960-85
Alesina and Perotti (1996)	2SLS, 3SLS	Sociopolitical Stability Model	Negative	No	70	1960-85
Li and Zou (1998)	Panel, fixed effects	Lee and Zou	Positive	No	46	1960-94
Barro (2000)	3SLS	Barro	Whole Sample: Insignificant; poor; Negative; Rich: Positive	Yes	100	1965-95
Forbes (2000)	Panel, fixed effects	Perotti (lag 1)	Positive	No	45	1966-95
Banerjee and Duflo (2003)	Fixed, Random Panel; First Difference; Arellano and Bond	Perotti, Barro	Inconclusive: Positive for Perotti, Mixed for Barro Specifications	Yes	45	-
Bjornskov (2008)	Fixed, Random Panel	Perotti, Barro	Negative for leftwing governments; positive for rightwing governments	Yes	178	1975-2000
Herzer and Vollmer (2011)	OLS, Panel cointegration Techniques	Galor and Moav	Negative	No	46	1970-96

6.2.3. Trade, growth and inequality

The idea that trade has an impact on economic growth goes back at least to Adam Smith. The standard models of trade predict that lower trade barriers generate static gains for a country. Recently, many studies have shown a positive impact of increased trade on the economic growth of a country (Dollar, 1992; Edwards, 1993; Sachs and Warner, 1995; Dollar and

Kraay, (2001a). Grossman and Helpman (1990) argue that gains from trade are dynamic and helpful for sustained growth rates. Frankel and Romer (1999) in a cross-country study, found that trade openness has a positive and significant effect on economic growth.

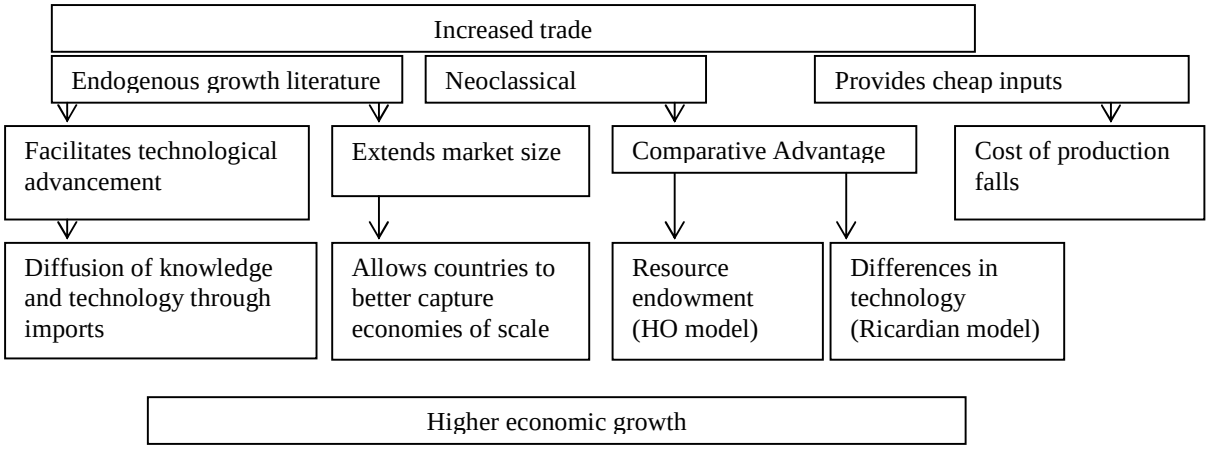
There are a number of mechanisms through which trade allows a country to improve its growth rates. Trade allows economies to exploit the sectors where they have a comparative advantage in production. Trade expands the market size, which is helpful for production on a larger and efficient scale. Trade diffuses new technologies and thus improves the productivity and performance of local workers and managers. Technology transfer is particularly helpful for developing countries which have little capacity to develop new technologies. Consumers also benefit from trade as lower trade barriers provide them with a variety of cheap products, thereby increasing their purchasing power and living standards. Similarly, producers also benefit from buying cheap inputs from international markets.

Although it is widely accepted among economists and policy makers that trade is an engine of economic growth, the literature on the growth effects of trade also suggests that trade-led growth may not be an appropriate strategy for sustained and rapid growth in the presence of distortions such as credit market imperfections, political instability, weak institutions and poor infrastructure.

2. Description of channels through which trade can affect growth

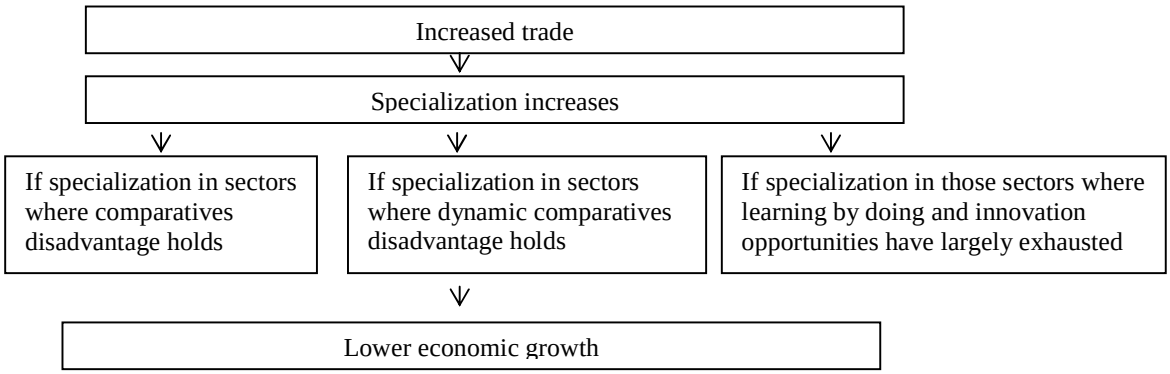
Trade is beneficial for long-run growth

Grossman and Helpman (1990, 1991); Rivera-Batiz and Romer (1991); Barro and Sala-i-Martin (1997); Baldwin et al., (2005): Romer (1989), Ades and Glaeser (1999), Alesina et al. (2000), and Bond et al. (2005)



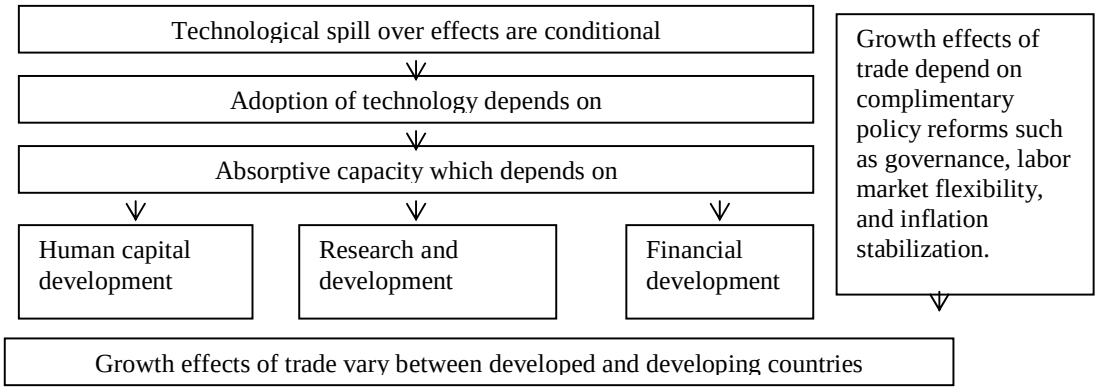
Trade is harmful for long-run growth

Grossman and Helpman (1990, 1991); Redding (1999); Lucas (1988); Young (1991)



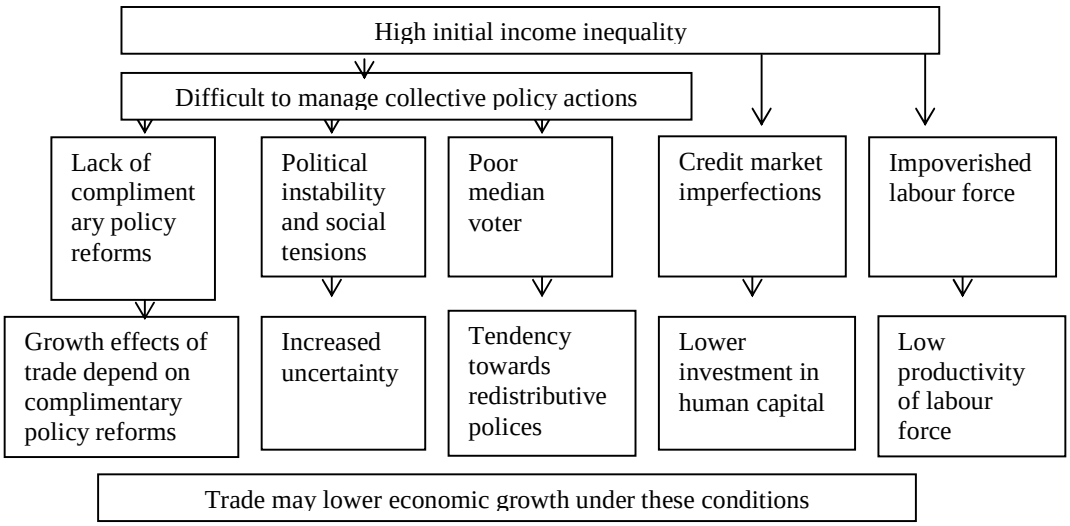
Growth effects of trade are conditional

Cohen and Levinthal, (1989); Benhabib and Spiegel (2005); Verspagen, (1991); Fagerberg; (1994); Aghion et al., (2005).



Problems related to high degree of inequality

Persson and Tabellini (1994); Alesina and Perotti (1996); Alesina and Rodrigo (1994); Keefer and Knack (2000); Baumol (2007)



6.3. Data

We use the Gini coefficient, one of the most popular representations of income inequality, to measure income inequality. It is based on the Lorenz Curve, which plots the share of population against the share of income received and has a minimum value of 0 (perfect equality) and maximum value of 1 (perfect inequality). Missing values in income inequality data are the major problem in cross-country analysis. Many developing countries have only one or two observations. Therefore, we expanded the existing database by including comparable data on poverty and inequality from recent household surveys included in World Bank, UNDP, IMF Staff reports and Poverty Reduction Strategy Papers. Similarly, we encounter another problem with inequality data that is, the availability of different observations for a given survey year. We chose those values that are considered to be high quality in the empirical literature on inequality.

To make the data more comparable, we take data on variables in the form of averages between two survey years. Per capita real GDP growth rates are annual averages between two survey years. To find per capita real GDP growth rates, we subtract the value in the current year from the value in the previous year and then divide it by the value in the previous year. We use the same formula to find the previous year's growth rate and then take the average of the growth rates of two consecutive periods. The data on real GDP are derived from the IMF and the International Financial Statistics databases.

Panel data for 65 developing countries for the period 1965-2008 has been assembled with the data averaged over periods of three to seven years, depending on the availability of inequality and poverty data. The minimum number of observations for each country is three and the maximum, nine. That is, only countries with observations for at least three consecutive periods are included. In the dataset, two household surveys per country define what is called an interval, of three to seven years in length. The entire sample includes 337 observations and 272 intervals.

To measure credit market imperfection, we construct a dummy variable HFI equal to one for countries with a high level of financial intermediation that is above the median in the sample. Following King and Levine (1993), financial market development and credit market

imperfections are represented by taking the summation of the share of broad money (M2) in GDP, and the share of credit to the economy in GDP. M2 as a percentage of GDP shows broad money and is taken from line 34 plus 35 of the IFS. Credit as percentage of GDP represents the claims on the non-private sector and is taken from line 32d line of the IFS. This study identifies credit market imperfections in low income developing countries as the likely reason for a strong negative relationship between inequality and economic growth. While in the short run the relationship between growth and income inequality might be positive, over time more inequality hampers economic growth.

The terms financial development, developed financial markets, high financial intermediation, and financial liberalization have been used alternatively. The term of low credit market imperfections represents developed financial markets. However, this term has been used in the form of a dummy variable and three continues variables (credit to private sector, money supply and average of both). This study mainly focuses two indicators of financial development namely credit to private sector and money supply following King and Levine (1993). Theses two indicators are widely used in the literature on financial development for following reasons. First, data series for above mentioned indicators are available over a long period of time and for a large number of developing countries. Second, theses indicators are highly correlated with other measures of financial liberalisation such as number of banks.

Financial intermediation can be measured with different indicators such as number of banks (private and state owned), financial advisors or brokers, building societies, credit unions and insurance companies. The present study does not use indicators of financial intermediation for following reasons. First, financial intermediation is not a primary focus of this study. Second, data series on different indicators of financial intermediation are difficult to obtain, particularly from low-income developing countries. Second, panel data over a long period is difficult to obtain, particularly, comparable panel data series meaning that data set in relation to available household survey years is rather difficult to obtain and manage.

To measure trade openness, we add exports and imports and then divide it by gross domestic product. It is to clarify that trade share (trade openness) does not capture trade liberalisation as it measures structure not policy. Trade liberalisation can be better captured with policy measures such as reduction in tariff rates. Using trade share as a proxy for globalisation our

main concern is to assess the distributive and poverty effects of economic integration into global market.

Edwards (1993) conducts a survey of the literature on openness and growth through the late 1980s. He notes that most of the empirical research is based on the relationship between trade and growth instead of trade policy and growth. Rodriguez and Rodrik (2001) mainly focus on trade policy variables and provide an extensive debate on different policy variables such as quotas and tariffs. Their study acknowledges that many cross-country studies have used trade openness (trade share) as trade policy variable.

Rodriguez and Rodrik (2001) provide extensive critical analysis on different measures of trade policy. Their study evaluates shortcomings of trade policy measure for most influential papers, in the area of trade and growth, such as a study on trade policy's index by Sachs and Warner (1995). Frankel and Romer (1999) analyse the relationship between trade volumes and income levels and caution that their results are not directly applicable to the impacts of trade policies. Our focus is also on trade volume (trade structure) and our results are also not directly linked to the effects of trade policy.

Data on imports and exports are the annual averages between two survey years. Data on exports and imports are derived from the IFS database. Population growth rates are taken from World Bank development reports. The secondary school enrolment is at the beginning of the period and is derived from World Bank database. Data on the ratio of government expenditure and investment as shares of GDP are averages for the period between two survey years and come from the IFS[33]. The data set includes countries from all regions of the developing world, including 12 countries from South and East Asia, 24 countries from Central and Eastern Europe, 15 countries from Latin America, 12 countries from Sub-Saharan Africa and 7 countries from the Middle East and North Africa.

6.4. Model

[33] Description of variables is shown in appendix.

6.4.1 Model

In order to estimate the links between inequality and growth in the data, we will follow a standard empirical growth equation:

$$(y_{it} - y_{it-1}) = \delta y_{it-1} + \omega' x_{it} + \beta g_{it-1} + v_i + u_t + \varepsilon_{it}, \ldots\ldots\ldots\

inequality and initial income will solve the problem of endogeneity, it may still persist and in order to remove it further we will use the instrumental approach of estimation.

$$(y_{it} - y_{it-1}) = \delta y_{it-1} + \omega' x_{it} + \beta_1 g_{it-1} + \beta_2 Edu_{it} + \beta_3 Inv_{it} + \beta_4 Inf_{it} + v_i + u_t + \varepsilon_{it}, \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where *i* represents each country and t represents each time period (with *t* = 1, 2….T); $Education_{it}$ is secondary school enrolment rate (as a percentage of the total secondary school-aged population). This variable is used as a proxy to human capital; $Investment_{it}$ is the share of gross capital formation in GDP, and; $Inflation_{it}$ is the annual averages between two survey years, calculated using the IFS's CPI data.

The choice of regressors is motivated by three main considerations. First, we need a parsimonious model as the number of available observations dramatically falls once we estimate the equations for inequality, a variable for which data availability is quite limited. Second, this choice ensures comparability with existing work in the growth literature. Third, the selected controls are relevant as explanatory variables for our growth regressions.

Clearly, omitted variable bias could be problematic if there is strong correlation between the dependent variable in question, the inequality variable, and a third omitted variable. Moreover, given the large potential number of variables that could be included in a growth regression, it is almost impossible to infer how omitted variables could affect the estimates of inequality and growth. Here, we will depart from Perotti (1996) and Forbes (2000) by incorporating the issue of credit market imperfection and some other control variables that play a key role in determining the growth-inequality relationship.

Galdor and Zeira (1993) argue that degree of inequality in the presence of an imperfect capital market implies that more individuals face credit constraints. As a result, they are not able to carry out productive investments in human or physical capital which can take place in the short run or the long run. In addition, more unequal societies generate a rise in the fertility differentials that also leads to less investment in human capital by the poor.

This yields Equations 3, which includes an interaction term for credit market imprecation and a dummy variable for high financial intermediation level:

$$(y_{it} - y_{it-1}) = \delta y_{it-1} + \omega' x_{it} + \beta_1 g_{it-1} + \beta_2 Edu_{it} + \beta_3 Inv_{it} + \beta_4 Inf_{it} + \beta_5 g*HFI_{it} + \beta_6 HFI_{it} + v_i + u_t + \varepsilon_{it}, \ldots (3)$$

HFI is a dummy variable equal to one for countries with a high level of financial intermediation, zero otherwise. It is expected that β1>0, β5<0, and β6>0 meaning that the positive effect of inequality on growth is weaker in countries with high financial intermediation levels (or developed financial markets). The coefficient of interaction term g*HFI is showing that more inequality in those countries that have relatively more developed financial structure lead to decline in economic growth. Countries with high initial inequalities in combination with high financial intermediation explains the fact that a majority of the population live in lower segment of the inequality and are unable to borrow due to lack of collateral. Put another way, the rich have better access to loans to finance physical investment. Lower investment in human capital translates its negative effect to economic growth. The poor are not only unlikely to invest in human capital but in physical capital as well. Therefore high initial inequality co-existing with an imperfect credit market means that investment in human and physical capital is unlikely and hence economic growth declines.

Recognition that the increasing openness of an economy to international trade can allow greater and more efficient use of labour is likely to increase the growth rate. Hence, our model includes trade openness in the regression.

$$(y_{it} - y_{it-1}) = \delta y_{it-1} + \omega' x_{it} + \beta_1 g_{it-1} + \beta_2 Edu_{it} + \beta_3 Inv_{it} + \beta_4 Inf_{it} + \beta_5 g*HFI_{it} + \beta_6 HFI_{it} + \beta_7 Op_{it} + v_i + u_t + \varepsilon_{it}, \ldots (4)$$

The variable Op_{it} is measured as sum of exports and imports as percentage of GDP. It is expected that $\beta 7>0$ because openness to trade promotes growth by encouraging economies to specialise and produce in areas where they have a relative cost advantage over other economies. Trade expands the markets that local producers can access, allowing them to produce at most efficient scale to keep down the costs and it also disperses new technologies and ideas, increasing the productivity of local workers and managers.

In order to address non-linear dimensions of inequality, we introduce a square term for inequality. Here our basic hypothesis is that in a linear specification, inequality is positively correlated with economic growth. In the case of non-linear specification, a moderate level of

inequality positively affects the growth, while a high level of inequality is detrimental to economic growth.

$$(y_{it} - y_{it-1}) = \delta y_{it-1} + \omega' x_{it} + \beta_1 g_{it-1} + \beta_2 (g_{it-1})^2 + \beta_3 Edu_{it} + \beta_4 Inv_{it} + \beta_5 Inf_{it} + \beta_6 g^* HFI_{it} + \beta_7 HFI_{it} + \beta_8 Op_{it} + v_i + u_t + \varepsilon_{it}, \ldots (5)$$

The expected signs are for $\beta_1 > 0$ $\beta_2 < 0$, as a low level of inequality is economically benign while after a threshold level high income inequality becomes socially malign on several dimensions.

Finally, recognising the importance of corruption highlighted in recent literature, we extend our basic model, equation 2, by controlling the effect of corruption to assess this important channel in the growth inequality relationship that has been paid little attention in recent literature.

$$(y_{it} - y_{it-1}) = \delta y_{it-1} + \omega' x_{it} + \beta_1 g_{it-1} + \beta_2 Edu_{it} + \beta_3 Inv_{it} + \beta_4 Inf_{it} + \beta_5 Op_{it} + \beta_6 Cor_{it} + v_i + u_t + \varepsilon_{it}, \ldots (6)$$

It is expected that $\beta_6 < 0$, as corruption deters economic growth by subverting institutions and promoting rent-seeking activities. It is obviously possible to include a number of additional variables; however, this paper focuses on this simplified specification for three reasons. First, this model is typical of that used to estimate the effect of inequality on growth, so any discrepancy between this paper and previous work cannot be explained by model specification. Second, since sample size is already limited by the availability of inequality statistics, and particularly since panel estimation requires a large number of observations, the simple specification helps maximise the degree of freedom. Third, by focusing on stock variables (initial inequality and income) measured at the start of the periods, rather than flow variables measured throughout the periods, endogeneity could be reduced.

6.5. Results and Discussion

The panel regression results regarding growth inequality relationship have been reported in tables ranging from Table 6-1 to Table 6-18. Table 6-1 to Table 6-4 have been provided in the main text while Table 6-5 to Table 6-18 have been reported after concluding section. The first column in Table 6-1 provides the list of variables used. All other columns report parameter estimates drawn from the 4th equation of the growth model, already specified, using different

econometric techniques. The second and third columns report parameter estimates drawn using OLS. The variable inequality*high financial intermediation (HFI) is revealed to be insignificant with a wrong sign, and an independent effect of HFI is also insignificant while the effect of inequality is positive and significant.

Similarly, parameter estimates drawn using random effects, reported in columns 4 and 5, are not consistent with the theory as three key variables - inequality, credit market imperfection and trade– are revealed to be insignificant. In column 6, results provided using fixed effects technique are much more satisfactory and consistent with the theory. The effect of initial inequality on growth is positive and statistically significant at 1% level of significance, while the combined effect of initial inequality and HFI is negative and significant at 5% level of significance. This finding implies that an independent effect of inequality is beneficial for economic growth and negative effects are produced through credit market imperfections. Finally, the results provided in column 7 are drawn using the GMM econometrics technique. In this case, too, results are satisfactory and robust.

Table 6-1: Parameter Estimates for Economic Growth, Income Inequality and Credit Market Imperfections.

Variables	**OLS**	**OLS**	**R E**	**RE**	**F E**	**GMM**
Initial	0.045	0.048	0.041	0.049	0.238	0.41
Inequality	(2.29)**	(1.68)***	(1.80)***	(1.46)	(3.01)*	(5.53)*
Initial Income	-0.860	-0.882	-1.924	-1.934	-2.901	-2.571
	(-4.69)*	(-3.83)*	(-5.84)*	(5.81)*	(-6.06)*	(-4.43)*
Investment	0.279	0.278	0.270	0.268	0.382	0.071
	(7.93)*	(7.74)*	(7.30)*	(7.26)*	(7.23)*	(1.80)***
Inflation	-0.036	-0.036	-0.038	-0.038	-0.034	-0.098
	(-7.17)*	(-6.74)*	(-7.94)*	(-7.48)	(-5.01)*	(-3.06)*
Education	0.052	0.052	0.072	0.073	0.067	0.105
	(4.48)*	(4.35)*	(5.72)*	(5.70)*	(3.40)*	(6.19)*
Openness	-0.014	-0.014	-0.008	-0.008	0.01	-0.012
	(2.40)**	(2.33)**	(-1.27)	(-1.27)	(0.83)	(-1.45)
Inequality*HFI	0.000	-0.005	0.003	-0.001	-0.201	-0.448
	(0.08)	(0.135)	(0.338)	(-0.22)	(-1.94)**	(-6.02)*
HFI	-	0.262	-	0.60	-	19.51
		(0.161)		(0.32)		(5.22)*
R-squared	0.39	0.39	0.42	0.42	0.66	0.644
Adj. R-squared	0.38	0.37	0.40	0.40	0.54	0.626
D W Stat	1.33	1.33	1.57	1.57	2.23	-
Observations	330	330	330	330	330	330
Countries	65	65	65	65	65	65

Note: The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

The panel regression results regarding growth inequality relationship given in Table 6-1 and Table 6-2 confirm the overall positive and significant relationship between growth and inequality. The results also show a negative and highly significant relationship between growth and initial income per capita. This implies that, keeping other factors constant, a country with less initial income per capita tends to grow faster than a rich country. The effect of investment share on GDP growth is strong and robust. The parameter estimate for macroeconomic instability (measured by inflation) is revealed as negative and significant, as expected. The coefficient of the interaction term g*HFI is negative and significant, showing that high financial development leads to lower growth in highly unequal societies Due to credit market imperfections, the negative impact of a decline in investment in human capital on growth is sufficiently strong to dominate the positive impact of investment in physical capital on growth, thereby decreasing overall growth rates.

It is expected that $\beta1>0$, $\beta5<0$, and $\beta6>0$. These expected signs together imply that the positive influence of inequality on growth is weaker in economies where financial markets are developed (or financial intermediation levels are high). The interaction term, Inequality*HFI ($\beta5$), is revealed to be negative, while HFI ($\beta6$) is positive and highly significant as expected. The coefficient of interaction term g*HFI shows that high financial development leads to lower growth in highly unequal societies.

If a country has high initial inequalities in combination with weak financial development, this explains the fact that a majority of the population lives below poverty line and is unable to borrow due to lack collateral. On the other hand, the rich have greater access to loans to finance physical investment. Since the poor are unable to borrow, they invest less in human capital. This lower investment in human capital spills over its negative effects onto economic growth over time. Therefore, high initial inequality coexisting with an imperfect credit market means investment in human and physical capital is unlikely and hence economic growth declines.

To understand the issue of market imperfection more clearly, we divide the sample taken in short time period into low and relatively high financial intermediation level (or developed

financial markets). The effect of inequality on growth differs between low and high financial intermediation sub-samples. The insignificance of the inequality coefficient in Table 6-7 is consistent with the argument that inequality has no explanatory power in countries with developed financial markets. It is interesting to note that the effect of openness is highly significant in countries where financial markets are developed. In the case of low financial intermediation markets, (see Table 6-7), credit market imperfections may be a source of the positive link between inequality and growth. The results show that inequality enhances growth in countries with low levels of financial market development and less credit available to the private sector.

In order to gain a deeper insight into the relationship between growth and income inequality, we divide the entire sample into a long time period. For the long time period, we include observations with a gap of 10 to 20 years between two survey years. The panel regression results in the long time period are given in Table 6-6. We did not find sufficient evidence to accept our second hypothesis that in the long run, inequality tends to lead to a deterioration in economic growth. Therefore, our study finds a positive impact of inequality on growth in both the short run and long run.

In order to assess our first hypothesis about the non-linear effect of inequality, we estimate equation number 5. Here our basic hypothesis is that in a linear specification, inequality is positively correlated with economic growth. While in the case of quadratic specification, a moderate level of inequality positively affects growth, a high level of inequality is detrimental to growth. The expected signs for $\beta 1 > 0 \beta 2 < 0$ imply that a low level of inequality is economically benign while, after a threshold level, high income inequality has adverse effects on economic growth.

Table 6-2: Non Linear Parameter Estimates for Economic Growth and Credit Market Imperfections.

Variables	OLS	R E	F E	FE	GMM
Initial	0.26	0.47	1.14	1.19	0.770
Inequality	(2.70)*	(1.74)**	(3.09)*	(3.39)*	(17.67)*
Inequality	-0.003	-0.005**	-0.01	-0.01	-0.008
Square	(-2.66)*	(-1.73)	(-2.87)*	(-2.85)*	(-15.49)*
Initial Income	-1.31	-1.78	-2.85	-2.74	-2.604
	(-3.29)*	(-5.12)*	(-6.08)*	(-5.85)*	(-10.02)*
Investment	0.24	0.25	0.325	0.33	0.028
	(5.38)*	(4.95)*	(5.97)*	(6.37)*	(1.04)
Inflation	-0.03	-0.03	-0.03	-0.03	-0.019
	(-4.55)*	(-4.96)*	(-3.88)*	(-3.79)	(-1.44)***
Education	0.06	0.07	0.07	0.07	0.076
	(3.63)*	(4.39)*	(3.07)*	(2.88)*	(11.70)*
Openness	-0.01	-0.007	0.003	0.001	-
	(-1.8)**	(-0.96)	(0.22)	(0.12)	
Inequality*HFI	0.02	-0.01	-	-0.14	-0.100
	(0.58)	(-0.25)		(-1.6)***	(-2.61)*
HFI	-0.56	0.88	-	-	6.376
	(-0.30)	(0.41)			(3.72)*
R-squared	0.40	0.42	0.67	0.68	0.92
Adj. R-squared	0.38	0.40	0.56	0.66	0.91
D W Stat	1.38	1.63	2.40	2.40	1.45
Observations	330	330	330	330	330
Countries	65	65	65	65	65

Note: The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 6-2 reports the results of the non-linear effect of inequality on economic growth. The results for parameters $\beta 1$ and $\beta 2$ are revealed to be significant with correct signs, where former is positive and latter negative, at 1 percent level of significance. Our basic findings, reported in Table 6-1, are robust to non-linear specifications of the growth-inequality relationship. Thus, we can infer that inequality could be either beneficial or harmful for growth, depending on the existing level of inequality. A moderate level (i.e. a Gini coefficient equal to 0.38) of inequality is beneficial for growth, while a high level of inequality is detrimental to growth.

To best of our knowledge, there is hardly any study which tests the growth-inequality relationship for OIC countries. We also find a non-linear relationship between growth and inequality in this sub-sample (Table 6-5). Inequality is good for growth when it is primarily derived from physical capital but after a certain level its positive effects are tempered, as

human capital becomes the prime engine of economic growth that requires a moderate level of inequality and a less binding credit market.

Our hypothesis that inequality tends to be negatively related to economic growth in countries with lower levels of economic development while positively correlated in the countries with higher levels of economic development has been confirmed by empirical evidence. We divide developing countries into two groups, according to their per capita income (PCY), i.e. countries with lower per capita income and countries with higher per capita income. Results reported in Table 6-8 provide clear evidence of the reversal of inequality sign after a certain level of economic development. The negative effects of inequality dominate in countries with lower PCY and positive effects of inequality dominate in countries with higher PCY.

Regional Analysis

To confirm the stability of results that we have derived at aggregate level, our study conducts the same analysis at regional level. The panel regression results for each region are given in Table 6-3. Whether inequality is harmful or good for economic growth also depends on regions. Our study finds out that inequality is good for growth in sub-Saharan African countries and transitional economies while bad for growth in South and East Asian countries and Middle Eastern and North African countries. The effect of investment and education on economic growth is robustly significant across the regions.

Table 6-3 Relationship between Growth and Inequality

Dependant variable: Growth								
Regions	***Explanatory Variables***							
	Ineq	**GDP**	**INV**	**INF**	**SCH**	**INE*HFI**	**Trade**	**R-Sq**
Sub-Saharan Africa	0.498 (1.78)*	-9.17 (-4.26)***	5.65 (2.02)*	0.035 (0.95)	37.29 (3.8)***	-0.68 (-2.18)*	0.0004 (0.016)	0.96
Latin America	0.06 (0.39)	-2.37 (-1.66)***	0.27 (1.94)***	-0.027 (-1.25)	0.07 (1.65)*	-0.07 (-0.40)	-0.01 (-0.40)	0.43
South and East Asia	-0.19 (-7.36)***	-1.22 (-4.16)***	0.25 (4.11)***	0.03 (0.85)	0.025 (2.30)***	0.165 (1.88)*	-0.006 (-0.78)	0.60
Transitional Economies	0.34 (1.81)*	-4.33 (-1.60)*	0.46 (2.11)**	-0.018 (-1.40)	0.262 (3.50)***	-0.24 (-0.60)	0.02 (0.73)	0.88
Middle East and North Africa	-11.39 (-1.77)***	-5.29 (-2.91)**	8.87 (3.57)***	-3.10 (-2.61)**	0.35 (0.27)	-1.94 (-0.46)	0.23 (0.27)	0.75

Note: The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

The effect of initial GDP is robustly negative and significant across the regions. This means that keeping other factors constant, consistent with the convergence theory, a country with less

initial income per capita tends to grow faster than a rich country. However, openness was not revealed to be significant across regions and also its sign is not consistent across regions. Possible reasons could be anti-globalisation arguments that state that openness is more favourable for developed countries.

We replicate this analysis for Asian countries in order to assess the robustness of results and assessment of trade openness in this region. Our basic results seem to hold fairly well in this region too. The only element that appears different in this region is the significance of openness to trade, at 5 percent level of significance. We can reasonably conjecture that a trade-led growth phenomenon cannot be generalized for all developing countries, particularly in the success stories of East Asian countries.

Table 6-4: Parameter Estimates for Growth, Inequality and Credit Market Imperfections in Asian Countries

Independent Variables	**Parameter Estimates 2-SLS**
Initial Inequality	0.729
	(2.82)*
Income	-4.168
	(-2.88)*
Investment	0.169
	(1.798)***
Inflation	-0.047
	(-0.242)
Education	0.052
	(1.224)
Openness	0.031
	(2.017)**
Inequality*HFI	-0.849
	(-2.363)*
HFI	35.166
	(2.465)*
Population Growth	-1.994
	(-2.94)*
No of Countries	18
R-squared	0.69
Adj. R-squared	0.66
D W Stat	1.70

Note: The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

The panel regression results regarding growth inequality relationship given in Table 6-4 confirm a positive and significant relationship between growth and inequality. This implies that in this region, high initial income inequality yields higher aggregate savings, capital

accumulation and economic growth. Thus, capital accumulation is revealed as the prime engine of economic growth, as is evident from a more significant parameter estimate for investment as compared to human capital. Although human capital is also positive in explaining growth, it is less significant.

The results reported in Table 6-14 to Table 6-16 show that the interaction term, inequality*openness, is negative and trade openness is positive and highly significant, as expected. The negative sign on inequality*openness implies that the positive growth effect of trade is weakened the more unequal is a society.

Theories suggest that some of developing countries are not able to absorb technology transfer from developed countries due to lack of human capital, financial development and skilled labour. In other words, some countries are not economically and socially capable of taking advantage of technology transfer through increased trade. These theoretical considerations lend support to the idea that trade does not transfer its positive effect on growth in those countries where income inequalities are high.

The panel regression results for the long-term period are given in the fourth and fifth columns of Table 6-6, where the main findings of the study in the short run are seem to hold also in the long run. Societies with high income inequalities coupled with socio-economic problems, such as social conflict, macroeconomic instability, low investment in human capital, unskilled labour and weak financial institutions, remain unable to benefit from the positive effects of trade even in the long run.

Following the research questions posted by the study, we find out that inequality, in general, is not harmful for growth and the negative impact on growth has been explained by the combined effect of developed financial markets and inequality, where the negative effect of less human capital investment in the past has negative consequences for economic growth over time. Openness to trade has been confirmed as positive and significant in Asian countries. Furthermore, this study finds that the positive effect of inequality is not consistent across the regions and parameter estimates for inequality substantially change in some regions from positive to negative and in some cases are insignificant.

Similarly, following our hypotheses, this study does not find sufficient evidence to reject the first, third, fourth and fifth hypotheses. This study does not find sufficient evidence to accept the second hypothesis, i.e. inequality tends to be positively related to economic growth in the short term while negatively correlated in the long run. Our study finds that inequality is positively related with growth in both the short run and long run. We find strong evidence in the case of OIC countries that inequality is positively correlated with economic growth up to a moderate level in a linear specification and detrimental to economic growth after a certain level in a non-linear specification. Our hypotheses that inequality tends to be negatively related to economic growth in countries with lower levels of economic development while positively correlated in the countries with higher levels of the economic development has been confirmed by empirical evidence. Results reported in Table 6-2 and Table 6-8 provide clear evidence of a reversal of inequality sign after a certain level of economic development. The negative effects of inequality dominate in countries with a lower PCY and the positive effects of inequality dominate in countries with a higher PCY. Finally, the results show that the growth effect of trade substantially and significantly differs between countries with low income inequalities and countries with high income inequalities, thus confirming our fourth hypothesis.

6.6 Robustness

In order to assess the robustness of our results we make various checks: five-year averages, removal of outliers, alternative econometric techniques, inclusion of further control variables and estimation of sub-samples.

6.6.1 Five-year averages

First, to assess whether the findings above are robust, we use data averaged over five periods.[34] The estimation results are reported in Table 6-9. As can be seen, our hypotheses are confirmed using these five-year-averaged data. The effect of inequality on growth is positive while the combined effect of inequality and high financial intermediation is negative. The signs and significance level of other control variables remain unaffected.

[34] Since data for inequality are not always available in a five-year window, we follow Dollar and Kraay (2002) and start out with the first available observation and then look for the next observation, that is five years. Hence, the number of observations falls to 287.

6.6.2 Removing outliers

We also test for the effect of removing outliers (Table 6-10 and Table 6-11). We estimate the basic model after removing the five countries with the lowest and highest average inequality, income or growth. In each case, although the values of the coefficients do fluctuate, the coefficients remain significant with same signs.

6.6.3 Econometric techniques

We also use alternative econometric techniques in order to reduce bias. We use 2SLS and GMM for the basic model. Our main results hold across different techniques. Although the level of significance for parameter estimates improves in the case of GMM, our general findings hold across different econometric techniques. The magnitude of the relationship is higher in instrumental variables than in OLS, suggesting that the causal effect of inequality on development outcomes is in fact understated by the OLS relationship.

6.6.4 Including further controls

In addition, we introduce some additional control variables such as government spending and population growth in order to remove omitted variable bias, and again our main findings hold although coefficients do fluctuate (Table 6-12). In the growth literature, government consumption is considered an important determinant of growth. The estimated coefficients for government consumption are significant with the correct sign, while other control variables remain consistent in terms of signs and significance level. Therefore, our primary results are robust to the inclusion of further control variables.

6.6.5 Sub-samples

We also introduce sub-samples, specifically to asses the robustness of credit market imperfection. We divide the sample taken in a short time period by low and relatively high financial intermediation level. The effects of inequality on growth differ between low and high financial intermediation sub-samples. The insignificance of the inequality coefficient in Table 6-7 is consistent with the argument that inequality has no explanatory power in countries with developed financial markets. In the case of low financial intermediation markets, (Table 6-7), credit market imperfections may be a source of the positive link between inequality and

growth. The results show that inequality stimulates growth in countries with low levels of financial market development and credit available to the private sector.

6.7.6 Robustness: the interactive effect of trade and inequality

In order to assess whether the findings on interactive effect of trade and inequality are robust, we use data averaged over five time periods. As can be seen in Table 6-16, the findings of the study are robust, as the effect of trade on growth is positive while the combined effect of inequality and trade is negative. The signs and significance level of other control variables remain unaffected. In Table 6-16, we estimate the basic model, removing the five countries with the lowest and highest average inequality and trade. The results remain unaffected while treating outliers. This analysis also uses alternative econometric techniques in order to reduce bias (Table 6-14 and Table 6-15). Although the level of significance for parameter estimates improves in case of GMM, the main findings of the study hold across different econometric techniques. This study also introduces some additional control variables, government spending and population growth, in order to remove omitted variable bias and again, our main findings hold, although coefficients do fluctuate (Table 6-14 and Table 6-15).

6.8.7 Robustness: some additional robustness tests

Table 6-17 and Table 6-18 report some additional results using some further robustness tests. Table 6-17 reports results for different groups of countries according to their level of economic development. It is clear that growth-inequality nexus is negative and significant in low-income developing countries while it is positive in high income developing countries. Table 6-18 reports results for interactive term of inequality and developed financial markets using different variables. All of the interactive terms are negative and significant as expected while growth impact of inequality is positive and significant which is consistent with our earlier findings.

6.7. Conclusion

The issue of the growth effects of income distribution has long been uncertain in the theoretical and empirical literature. Conventional wisdom suggests a positive growth effect of inequality through incentives, physical capital accumulation, saving rates or investment indivisibility mechanism. On the other hand, the endogenous growth literature predicts a

negative growth effect of inequality through socio-political instability, market imperfections, fiscal redistribution and distortion, and fertility differential channels. This study contributes to the existing literature on income distribution and growth by answering the question as to why growth effects of income distribution are not definitely positive or negative.

Similarly, in recent years, the issue of growth effects of trade has also become unresolved in the literature. Conventional wisdom suggests a positive growth impact of trade through specialisation, technology diffusion and economy of scale mechanisms. However, endogenous growth theory models suggest that positive effects of trade on growth depend on forces of comparative advantages which push the economy's resources towards the activities that generate long-run growth or divert them from these activities. In addition, theories also suggest that some countries are not able to absorb technology transfer from developed countries due to lack of human capital, financial development and skilled labour. In other words, some countries are not socially capable of taking advantage of technology transfer. This study contributes to the existing literature on trade and growth by identifying the critical role of income distribution where countries with comparatively less income inequality seem to better acquire positive effects of trade for long-run economic growth.

A new panel data set on inequality has been constructed that reduces measurement error and ensures comparability across countries and over time. The study identifies credit market imperfections in low-income developing countries as the likely reason for a positive correlation between inequality and economic growth. This study finds a positive relationship between inequality and growth in both the short run and the long run. Moreover, this paper finds evidence that more physical and human capital investment have a positive and statistically significant impact on economic growth. The inflation rate, which is an indicator of macroeconomic instability, has been found robustly negative in all growth equations. This study also finds that inequality does matter for economic growth, but differently for different regions at various levels of economic development in the developing world. The inequality-growth nexus is significantly negative for the low-income group but strongly significantly positive for the high-income one. The findings of the study are robust to alternative econometric techniques, specifications and sub-samples.

This study finds a non-linear relationship between growth and inequality in OIC countries. Inequality is good for growth when it is primarily derived from physical capital but after a certain level its positive effects are tempered, as human capital becomes the prime engine of economic growth that requires a moderate level of inequality and a less binding credit market. This study does not find sufficient evidence to accept the hypotheses that inequality tends to hamper economic growth in the long run and finds a positive impact of inequality on growth in both the short run and the long run. From the regional analysis of growth inequality relationship, we conclude that it is not necessary that more inequality promotes economic growth in all developing countries. The effect of openness is positive and significant in Asian countries where some countries follow open-oriented trade policies and achieve high growth rates but the success stories of a few Asian countries cannot be generalised to all developing countries as the growth effect of trade is not favourable across all developing countries.

Finally, this study finds a positive relationship between trade and growth in both the short run and the long run. However, this relationship is substantially influenced by the domestic context in terms of the prevalence of high income inequalities. The study identifies high income inequalities in developing countries as the likely reason for a strong negative relationship between openness to trade and economic growth. The trade-growth nexus is significantly negative for the high-income inequalities group but strongly significantly positive for the low-income inequalities one. This finding suggests that a redistributive policy that alleviates inequality can increase long-run growth in developing countries by taking the advantage of the benefits of increased trade openness. We have provided evidence that inequality is good for growth only in a linear relationship while inequality is harmful for growth after a certain point. This implies that improvement of a high degree of inequality will not only have a direct benefit in the form of positive growth but may also have indirect ones, by allowing a country to take full advantage of trade openness.

Table 6-5: Parameter Estimates for Economic Growth for OIC Countries

Independent Variables	Parameter Estimates
Initial Inequality	+1.96
	(+1.75)**
Inequality Square	-0.02
	(-2.12)**
Income	-3.11
	(-2.86)*
Investment	0.35
	(3.37)*
Inflation	-0.05
	(-2.09)**
Education	0.08
	(2.25)**
Openness	11.87
	(1.95)**
Openness Square	-0.16
	(-1.95)**
Inequality*HFI	0.55
	(2.54)*
No of Countries	22
R-squared	0.73
Adj. R-squared	0.52
F Stat	3.55
	(0.000)

Table 6-6: Long Term Effects

Independent Variables	Parameter Estimates
Initial Inequality	0.36
	(2.61)*
Income	-1.17
	(-1.61)***
Investment	6.19
	(1.78)***
Inflation	-0.04
	(-2.19)**
Education	0.03
	(1.66)***
Openness	-0.01
	(-0.46)
Inequality*HFI	-0.29
	(-2.1)**
No of Countries	65
R-squared	0.76
Adj. R-squared	0.32
F Stat	1.75
	(0.03)

Table 6-7: High and Low Financial Intermediation Markets

Independent Variables	Parameter Estimates	Parameter Estimates
	HFI	LFI
Initial Inequality	0.05	0.13
	(0.71)*	(8.84)*
Income	-1.99	-4.17
	(-4.29)*	(-8.08)*
Investment	0.37	0.27
	(7.56)*	(4.84)*
Inflation	-0.02	-0.04
	(-1.84)***	(-7.87)**
Education	0.02	0.12
	(1.19)	(5.06)*
Openness	0.02	0.01
	(5.11)*	(0.997)
No of Countries	30	35
R-squared	0.58	0.71
Adj. R-squared	0.45	-
F Stat	4.31	46.97
	(0.000)	(0.000)

Table 6-8: High and Low PCY Economies

Independent Variables	Parameter Estimates	Parameter Estimates
	Low PCY	High PCY
Initial Inequality	-0.07	0.12
	(-1.6)***	(2.20)**
Income	-1.40	-3.95
	(-2.90)*	(-5.48)*
Investment	0.14	0.43
	(3.09)*	(5.54)*
Inflation	-0.05	-0.03
	(-7.61)*	(-3.02)*
Education	0.04	0.087
	(2.56)*	(2.86)*
Openness	-	0.024
		(2.10)**
No of Countries	31	34
R-squared	0.49	0.64
Adj. R-squared	0.47	0.52
F Stat	18.17	5.59
	(0.000)	(0.000)

Table 6-9: 5 Year Average Parameter Estimates for Economic Growth

Independent Variables	Parameter Estimates
Initial Inequality	0.21
	(2.26)**
Income	-2.85
	(-5.09)*
Investment	0.4
	(4.45)*
Inflation	-0.03
	(-6.57)*
Education	0.06
	(2.31)**
Openness	0.01
	(1.37)
Inequality*HFI	-0.15
	(-1.64)***
No of Countries	65
R-squared	0.71
Adj. R-squared	0.56
F Stat	4.81
	(0.000)

Table 6-10: Adjusting Outliers Excluding 5 Extreme High and Inequality Values

Independent Variables	Parameter Estimates	Parameter Estimates
	excluding 5 extreme high inequality values	excluding 5 extreme low inequality values
Initial Inequality	0.21	0.23
	(2.24)**	(2.51)*
Income	-2.79	-2.68
	(-4.63)*	(-4.87)*
Investment	0.4	0.39
	(4.40)*	(4.33)*
Inflation	-0.03	-0.03
	(-6.09)*	(-5.70)*
Education	0.06	0.07
	(1.99)**	(2.36)*
Openness	0.015	0.002
	(1.40)	(0.17)
Inequality*HFI	-0.16	-0.20
	(-1.82)***	(-2.04)**
No of Countries	60	60
R-squared	0.71	0.70
Adj. R-squared	0.56	0.55
F Stat	4.75	4.59
	(0.000)	(0.000)

Table 6-11: Adjusting Outliers Excluding 5 Extreme High and Low Growth Values

Independent Variables	Parameter Estimates	Parameter Estimates
	excluding 5 extreme high growth values	excluding 5 extreme low growth values
Initial Inequality	0.21	0.21
	(2.33)**	(2.07)**
Income	-2.78	-2.59
	(-6.44)*	(-4.77)*
Investment	0.41	0.42
	(4.40)*	(4.95)*
Inflation	-0.03	-0.04
	(-5.64)*	(-7.50)*
Education	0.06	0.06
	(2.34)**	(2.25)**
Openness	0.01	0.005
	(1.44)	(0.46)
Inequality*HFI	-0.12	-0.17
	(-1.24)	(-2.01)**
No of Countries	60	60
R-squared	0.68	0.70
Adj. R-squared	0.51	0.55
F Stat	4.06	4.70
	(0.000)	(0.000)

Table 6-12: Including Government Consumption New Specification

Independent Variables	Parameter Estimates
Initial Inequality	0.23
	(2.82)*
Income	-2.72
	(-6.60)*
Investment	0.37
	(5.15)*
Inflation	-0.03
	(-7.24)*
Education	0.03
	(1.15)
Openness	0.002
	(0.21)
Inequality*HFI	-0.23
	(-2.81)*
Government	-0.14
	(-2.18)**
No of Countries	65
R-squared	0.74
Adj. R-squared	0.60
F Stat	5.50
	(0.000)

Table 6-13: Growth, Corruption and Inequality 2-SLS

Independent Variables	2-SLS Parameter Estimates
Initial Inequality	0.03
	(1.80)***
Income	-0.50
	(-1.80)***
Investment	0.38
	(7.03)*
Inflation	0.01
	(0.41)
Education	0.03
	(1.15)
Corruption	-0.73
	(-2.61)*
No of Countries	65
R-squared	0.53
Adj. R-squared	0.52
DW Stat	1.57

Table 6-14: Economic Growth, Trade and Income Inequality

Variables	OLS	F E	R E	RE	GMM
Initial	0.07	0.16	0.14	0.14	0.76
Inequality	(2.32)**	(1.99)**	(3.13)*	(2.99)	(6.69)*
Initial Income	-0.83	-2.89	-2.06	-0.15	-4.47
	(-4.27)*	(-4.06)*	(-5.87)*	(-2.99)*	(-6.47)*
Investment	0.26	0.29	0.270	0.278	0.18
	(9.81)*	(5.91)*	(5.64)*	(5.09)*	(3.42)*
Inflation	-0.035	-0.04	-0.037	-0.039	-0.098
	(-7.89)*	(-3.48)*	(-5.90)*	(-5.49)*	(-3.06)*
Education	0.038	0.049	0.067	0.07	0.103
	(4.72)*	(2.33)*	(3.97)*	(4.13)*	(2.02)*
Openness	0.016	0.06	0.05	0.05	0.38
	(0.99)	(1.56)	(2.12)*	(2.16)**	(6.17)*
Inequality*	-0.001	-0.001	-0.001	-0.001	-0.01
Openness	(-2.18)*	(-1.18)	(-2.65)*	(-2.74)*	(-5.39)*
HFI	0.29	-	-	0.26	1.53
	(0.94)			(0.44)	(2.52)*
R-squared	0.46	0.67	0.42	0.43	0.69
Observations	330	330	330	330	330
Countries	65	65	65	65	65

The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 6-15: Economic Growth, Trade and Income Inequality: Sensitivity Analysis

Variables	**2SLS**	**R E**	**RE**	**GMM**	**GMM**	**GMM**
Initial	0.51	0.16	0.12	0.61	1.10	0.87
Inequality	(6.73)*	(3.30)*	(2.82)	(6.54)*	(7.71)*	(6.01)*
Initial Income	-3.16	-2.15	-2.02	-3.68	-5.66	-4.70
	(-6.29)*	(-5.44)*	(-5.34)*	(-5.83)*	(-7.32)*	(-5.89)*
Investment	0.22	0.28	0.26	0.22	0.20	0.21
	(6.00)*	(5.44)*	(5.45)*	(4.13)*	(3.45)*	(4.70)*
Inflation	-.08	-.04	-0.034	-0.09	-0.23	-0.09
	(-3.00)	(-5.84)*	(-5.09)	(-3.25)*	(-8.15)*	(-4.79)*
Education	0.045	0.059	0.06	0.06	0.05	0.05
	(5.95)*	(3.02)*	(3.88)*	(6.29)*	(2.04)*	(4.07)*
Openness	0.28	0.047	0.05	0.32	0.54	0.50
	(7.37)*	(2.04)*	(2.24)	(6.32)*	(8.60)*	(6.43)*
Inequality*	-.001	-0.001	-0.001	-0.01	-0.01	-0.01
Openness	(-7.46)	(-2.57)	(-2.76)	(-6.19)*	(-8.50)*	(-6.49)*
HFI	-	-	0.46		1.40	1.90
			(0.69)		(1.36)	(2.79)*
Government			-0.09			-0.18
Spending			(-2.59)*			(-5.95)*
Population		-0.42			-1.12	
		(-0.82)			(-2.48)*	
R-squared	0.58	0.44	0.47	0.50	0.60	0.70
Observations	330	330	330	330	330	330
Countries	65	65	65	65	65	65

The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 6-16: Economic Growth, Trade and Income Inequality: Robustness Tests

Variables	5 Year (FE)	Adjusting Outliers	Long term (RE)	Long term (RE)
Initial	0.13	0.10	0.09	0.10
Inequality	(1.98)**	(2.43)*	(1.24)	(1.43)
Initial Income	-2.95	-1.97	-0.79	-0.81
	(-4.95)*	(-5.96)*	(-1.53)	(-1.6)***
Investment	0.41	0.26	0.24 (4.92)*	0.23
	(4.34)*	(7.38)*		(4.77)*
Inflation	-0.04	-0.03	-0.04	-0.031
	(-6.24)*	(-7.00)*	(-3.01)*	(-2.47)*
Education	0.07	0.06	0.04	0.03
	(2.79)*	(4.63)*	(2.19)	(1.71)***
Openness	0.057	0.05	0.06	0.077
	(2.03)*	(2.14)*	(1.76)***	(2.14)*
Inequality*	-0.001	-0.001	-0.001	-0.002
Openness	(-1.72)***	(-2.46)*	(-2.19)*	(-2.50)*
Government		-.092		-.06
Spending		(-4.22)*		(-1.61)***
R-squared	0.70	0.46	0.38	0.40
Observations	330	330	330	330
Countries	65	65	65	65

The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Table 6-17: Growth- inequality: Disaggregation by income levels (IV)

	Low Income	Low Middle Income	Low Income (Full Sample)	High Income
Initial Inequality	-0.14 (-2.19)**	-0.07 (-1.62)***	-0.10 (-3.44)*	0.05 (1.16)
Income	-1.44 (-1.98)**	-0.20 (-0.26)**	-0.76 (-1.80)***	-1.77 (-2.87)*
Investment	0.14 (2.94)*	0.28 (4.54)*	0.20 (5.24)*	0.14 (1.98)**
Inflation	-0.12 (-3.59)*	-0.04 (-2.27)*	-0.06 (-3.76)*	-0.01 (-0.90)
Education	0.08 (4.40)*	0.029 (1.61)***	0.04 (3.46)*	0.095 (3.46)*
Openness	.01 (0.74)	.01 (0.37)	.003 (0.31)	.01 (0.58)
R-squared	0.55	0.35	0.38	0.37
Wald	74.19 (0.000)	46.17 (0.000)	85.00 (0.000)	40.05 (0.000)
Sargan	0.47 (0.92)	6.94 (0.08)	3.68 (0.30)	3.27 (0.51)
Basman	0.40 (0.94)	6.7 (0.08)	3.51 (0.31)	287 (0.58)
Observations	57	87	140	66
Countries	23	27	50	15

Table 6-18: Growth, Inequality and Financial Market (Robustness)

Variables				
Initial Inequality	0.238	0.19	0.18	0.22
	(3.01)*	(2.57)*	(2.85)*	(2.89)*
Initial Income	-2.901	-3.08	-2.60	-2.75
	(-6.06)*	(-4.08)*	(-4.75)*	(-3.56)*
Investment	0.382	0.43	0.37	0.43
	(7.23)*	(5.54)*	(6.93)*	(5.66)*
Inflation	-0.034	-0.03	-0.04	-0.03
	(-5.01)*	(-3.58)*	(-5.46)*	(-3.56)*
Education	0.067	0.098	0.07	0.09
	(3.40)*	(1.77)***	(3.44)*	(1.74)***
Openness	0.01	0.01	0.02	0.02
	(0.83)	(0.90)	(1.50)	(1.56)
Inequality*HFI	-0.201			
	(-1.94)**			
Inequality*Credit to Private Sector		-0.001		
		(-2.23)**		
Inequality*Money Supply			-0.001	
			(-1.85)**	
Inequality* Financial Development				-0.001
				(-2.75)*
R-squared	0.66	0.73	0.66	0.73
Adj. R-squared	0.54	0.57	0.53	0.58
F Stat	5.45	4.56	5.37	4.69
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	330	330	330	330
Countries	65	65	65	65

Note: The t-statistics are given in parentheses (*), (**), and (***) indicate statistical significance at 1%, 5% and 10% levels respectively

Appendix:

1. Description of Variables

Variable name	Definitions and Sources
Per capita real GDP	Per capita real GDP growth rates are annual averages between two survey years and are derived from the IMF, WDI and International Financial Statistics (IFS) databases.
Gini coefficient	It is a measure of income inequality based on Lorenz curve, which plots the share of population against the share of income received and has a minimum value of zero (reflecting perfect equality) and a maximum value of one (reflecting total inequality). The inequality data (Gini coefficient) are derived from World Bank data and the IMF staff reports and Poverty Reduction Strategy Papers (PRSPs).
Secondary school enrollment	The secondary school enrollment as % of age group is at the beginning of the period. It is used as a proxy of investment in human capital and derived from World Bank database.
Investment	Investments as shares of GDP are annual average for the period between two survey years and are derived from IFS.
Poverty	The poverty is defined as the percentage of population living on less than $1 a day at 1993 prices and adjusted for purchasing power parity. The sources of the poverty data are the World Bank and recent IMF country reports and PRSPs.
Credit as % of GDP	Credit as % of GDP represents Claims on the non-financial private sector/GDP and is derived from 32d line of the IFS.
M2 as % of GDP	It represents Broad money/GDP, and is derived from lines 34 plus 35 of the IFS.
Trade Liberalization	It is the sum of exports and imports as a share of real GDP. Data on exports, imports and real GDP are in the form of annual averages between survey years.
HFI	HFI is a dummy variable having a value of one for countries with a high level of financial intermediation that is above sample median and 0 otherwise. The level of Financial Intermediation is determined by adding M2 as a % of GDP and credit to private sector as % of GDP.

2. Empirical Literature Controversy

Authors	**Findings**	**Inequality Coefficient (β)**
Partridge (1997), Li and Zou (1998), Forbes (2000), and Lundberg and squire (2003)	Inequality is beneficial for growth	$\beta>0$ and significant
Alesina and Rodrik (1994), Persson and Tabellini (1994), Wan, Lu and Chen (2006), and Sukiassyan (2007)	Inequality is detrimental to growth	$\beta<0$ and significant
Barro (2000)	Inequality is insignificant in explaining growth	$\beta=0$ (insignificant)

3. Inequality-Growth Debate (Non Linearity)

Authors	Findings
Miyazawa (2006)	The link between inequality and growth is at first positive and then may become negative in the process of population aging
Banerjee and Duflo (2003); Chen (2003)	Document an inverted-U relationship between inequality and growth in that higher inequality enhances growth in more equal societies but reduces growth in less equal one
Voitchovsky (2005)	Inequality at the top quantiles of the distribution is positively correlated with growth while inequality at the lower end of the distribution is negatively linked to growth.
Fallah and Partridge (2007)	Inequality-growth nexus is positive in the urban sample while the link turns out to be negative in the nonmetro sample.
Bjornskov (2008)	Inequality is negatively linked to growth under leftwing governments while the connection is positive under rightwing governments.

7. Conclusion

In recent years attention has focused on the importance of the elimination of global corruption. International organizations such as the World Bank, the IMF and the UNO have set the elimination of corruption as their prime goal. Similarly, regional organizations have been advocating anti-corruption policies. Additionally, individual governments have been improving and strengthening the rule of law to monitor and punish corrupt officials. Despite these initiatives, corruption still exists and in fact it is increasing over time. According to the Global Corruption Barometer (2010) "corruption has increased over the last three years say six out of 10 people around the world, and one in four people report paying bribes in the last year"[35]. Policy makers often face the challenge of isolating the various avenues of corruption because of a lack of understanding of the various causes of corruption. This is because some institutional, political and cultural effects on corruption are very subtle and hard to quantify.

This thesis contributes to our understanding of the causes of corruption by identifying a novel channel of corruption, namely military participation in politics. This source of corruption is extremely important for both academic researchers and policy makers as it stems from the institutional, cultural and political settings of a society which are usually hard to quantify. The theoretical and empirical analysis of this study is unique because it analyzes the relationship between the military in politics and corruption and to our knowledge has not hitherto been addressed in the literature. In addition, our study differs from existing studies on the causes of corruption by empirically analyzing the importance of developed financial markets for cross country variations of corruption levels with special focus on the contagion nature of corruption.

How does globalisation determine cross-country variations in inequality and poverty in developing countries? This thesis answers this question by examining the consequences of globalisation for developing countries in general, and comparatively, for high financial intermediation (HFI) countries over a long period 1970 to 2008. The study is unique in the way that it disaggregates the consequences of globalisation for two sets of developing countries and uses more comparable statistics for inequality and poverty.

[35] http://www.transparency.org/policy_research/surveys_indices/gcb/2010

Finally, this thesis analytically explores and empirically tests the growth-inequality relationship. The issue of growth effects of income distribution has long been indecisive in the theoretical and empirical literature. On the one hand, conventional wisdom predicts a positive growth effect of inequality through incentives, physical capital accumulation, saving rates or investment indivisibility mechanism. While, on the other hand, endogenous growth literature predicts a negative growth effect of inequality through socio-political instability, market imperfections, fiscal redistribution and distortion, and fertility differential channels. This thesis contributes to the existing literature on growth-inequality relationship by answering the question as to why growth effects of income distribution are not definitely positive or negative. Similarly, this thesis also addresses the question as to why growth effects of trade are not definitely positive or negative.

7.1 Summary of the findings

The main results of this thesis can be summarized as follows:

- Chapter 3 shows that the presence of the military in politics significantly adds to corruption in a society. In particular, the results reveal that a one standard deviation increase in the presence of military in politics leads to a 0.22 unit increase in the corruption index. This effect arises because the presence of the military in politics expands the role of military officials in government and they usually hold the key to bureaucratic and administrative positions in the government machinery, controlling the scarce resources of the military sector, sectors related to military and other non productive activities. These sectors are least accountable to the public and so public resources can be exploited for private gain, in the control of elections, the distortion of market systems, and these can all cause a rise in corruption. A further novelty in our work is the use of quantile regressions to evaluate the conditional distribution of the military in politics and corruption. The results reveal that the military in politics substantially fosters corruption. This effect is more pronounced in the half of the conditional distribution; i.e., among the mean/median corrupt countries.

- Chapter 4 points out that the importance of financial market liberalization in combating corruption has been highlighted in the theoretical literature but no one has tested this relationship in an empirical settings. This chapter contributes to the existing literature on the causes of corruption by introducing the linear and non-monotonic relationship of corruption and financial liberalization. By drawing on a large cross sectional, country panels and regional

panel data sets over a long period of time (1984-2007), our analysis finds substantial support for a negative relationship between financial intermediation and corruption. The results imply that a one standard deviation increase in financial liberalization is associated with a decrease in corruption of 0.20 points, or 16 percent of a standard deviation in the corruption index. Our findings are consistent with respect to a number of robustness checks, including incorporating contagion effects alternative corruption indices and regional dynamics.

The existing literature on corruption assumes that the prevalence of corruption is determined by country specific factors. Nonetheless, some studies point to corruption as being interdependent across bordering countries and it is a common characteristic of low income countries. We also contribute to this part of the literature by evaluating the different lag lengths of contagious corruption. Our results show that a policy in a neighboring country that reduces corruption by one standard deviation in the past five to ten years will reduce corruption in the home country by 0.12 points.

- Chapter 5 summarises the following major findings: a non-monotonic relationship between income distribution and the level of economic development; globalisation does not have a favourable effect on inequality and poverty although it does appear to be pro-poor in economies where financial systems are relatively developed; finally, the government emerges as a major player in reducing inequality in developing countries. The potential link between globalisation and financial development can be described as follows: In economies where financial market imperfections prevail, globalisation (economic integration) tends to increase inequality by amplifying the income differences within the entrepreneurial class. Economic integration favours the richest entrepreneurs by providing them new investment opportunities and relieving them from lending to poorer entrepreneurs through underdeveloped financial system. This process increases the domestic borrowing rate which hurts the small firms as they mainly depend on external finance (Foellmi and Oechslin (2010).

The evidence on the existence of the Kuznets curve are relatively strong in HFI countries and this implies financial sector liberalization could be a source of achieving the threshold level of economic development earlier, and this has a beneficial spillover effect for the poorer segment of society. In our modelling of the poverty consequences of globalisation for the developing world we found that, globalisation accentuates rather than ameliorates poverty and amongst

domestic factors we find that economic growth is good for the poor while high income inequality clearly hurts poor people and increases their suffering. However, we find that a sharp contrast arises in our comparative analysis of HFI and LFI countries. In the HFI economies both openness to trade and FDI are good for the poor, as the estimated coefficients on both are highly significant with negative signs. In contrast, our results show that globalisation hurts the poor in LFI countries as the coefficient on both openness to trade and FDI are highly significant, with positive signs.

- Chapter 6 finds out positive effects of inequality and trade on growth both in the short run and long run. However, the growth effect of inequality is substantially influenced by the domestic context in terms of prevalence of credit market imperfections. The study identifies credit market imperfections in low-income developing countries as the likely reason for a positive relationship between inequality and economic growth. Similarly, growth effect of trade is found to be negative in economies where inequalities are relatively high. The results show that inequality does matter for economic growth but differently for different regions at different level of economic development. The inequality-growth nexus is significantly negative for the low-income group but strongly significantly positive for the high-income one. The findings of the study are robust to alternative econometric techniques, specifications, control of nonlinearity, inclusion of additional control variables, exclusion of outliers and sub-samples.

7.2 Academic Contribution

The main contributions of the thesis can be summarized as follows:

In Chapter 3, this thesis differs in several important aspects to previous work in the area of causes of corruption. First, we believe that this chapter is unique as it provides the first analysis of the military in politics, both theoretically and empirically, and therefore should provide a deeper understanding of the causes of corruption. Second, this chapter not only replicates earlier findings in the literature on corruption but also provides a better explanation of those causes of corruption which are inconclusive and have received least attention using recent data sets. Third, in contrasts to previous studies which generally focus one or two years of data, we use both cross sectional and panel data sets over a long period of time. Fourth, this chapter contributes to the existing literature on the sources of corruption by analyzing the distribution of the dependent variable (corruption). Fifth, existing studies on the topic focus on

either panels or cross sectional data bases which do not distinguish between developing and developed countries; in this study we make that distinction clear. Sixth, in this chapter we use a variety of econometric techniques to account for time dynamics and to control for the problem of endogeneity.

In Chapter 4, this thesis has a number of unique and novel elements compared to extant work in the area of causes of corruption. First, we believe that this is the first study that tests empirically the relationship between the financial intermediation and corruption. Second, this is also the first study to test for the presence of a threshold in shaping the link between corruption and financial development. Third, our study introduces the concept of regional panels in addition to cross sectional or cross country panels. Fourth, we introduce the concept of alternative lag lengths to trace out the repercussion effects of policy reforms in neighboring countries. Fifth, we model the role of spatially weighted corruption that takes account of the common political, cultural and regional factors and, sixth, we use a variety of econometric techniques to account for time dynamics and to control for the possible problem of endogeneity.

In Chapter 5, this thesis builds the argument that estimating the actual impact of globalisation on inequality and poverty remains largely an empirical issue. The available evidence, however, does not produce a consensus and the effect of globalisation on inequality and poverty remains ambiguous. Also, no previous study has tried to quantify the relative contributions of globalisation and other fundamental variables on inequality and poverty in developing countries. Clearly, from the national and international policy perspectives, it is imperative to explore both the nature and the importance of various factors in generating inequality and poverty. In this chapter we attempt to fill the gaps in the existing literature and lend a fresh perspective to the globalisation, inequality and poverty debate.

Finally, in Chapter 6 we analytically explore and empirically test the growth-inequality relationship. This chapter contributes in number of ways in the extant area of growth-inequality nexus. First, this chapter systemically evaluates and empirically tests the mechanisms of positive or/ and negative growth impact of inequality. Second, this chapter introduces non-linear dimensions of inequality in affecting growth. The chapter argues that inequality exerts negative influence on growth when an optimal level of inequality is

surpassed. In addition to the optimal level of inequality, this chapter shows that inequality is harmful for growth in those counties where the level of development is low while its effect turns out to be favourable in those economies where the level of development is high. Third, thanks to the availability of long data series that enabled us to test the very nature of long term growth-inequality relationship that is missing in previous studies. Fourth, this chapter argues that growth benefits of trade are not similar across regions. Particularly, success stories of East Asian countries that openness is good for growth can not be generalized for all developing counties. Fifth, and finally, this chapter provides unique and deeper insights into the trade-growth relationship by noting the role and importance of existing inequalities.

7.3 Policy Implications

In addition to the academic contribution, the analysis and the findings of this thesis suggest a number of policy implications, which are as follows:

1- The results reported in Chapter 3 suggest that the involvement of the military in the economic and political spheres of a country fosters corruption. This finding can help international and regional organisations and also domestic governments to devise policies which ensure the separation of the military from involvement in the political and economic life of a country. The military should not play a part in politics, as involvement of the military in politics breeds corruption.

2- The results of Chapter 4 suggest that market reforms, particularly domestic financial reforms, can substantially combat corruption. However, the possibility of a U-shaped relationship between financial liberalisation and corruption may be considered to keep the liberalisation within certain limits.

3- The results in Chapter Five have shown that globalisation accentuates rather than ameliorates inequality and poverty; although it does appear to be pro-poor in economies where financial systems are relatively developed. In this respect, policy makers may improve and reform financial institutions in order fully to reap the favourable effects of globalisation for poor members of society. Furthermore, in this situation, governments can also play an important role in safeguarding the interests of the poor, as the results in Chapter Five have clearly shown that the role of domestic governments is conducive to reducing cross-country inequalities and poverty incidence.

4- The results of Chapter Six suggest that the growth effect of inequality is non-monotonic, which provides a solid foundation to support and justify the argument that a redistributive policy that alleviates inequality can increase long-run growth in developing countries. Since findings also show that the growth effects of trade are positive in less segregated economies; a redistributive policy, in addition, can allow a country to take full advantage of trade openness.

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